

# The Mining Journal

## RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

NO. 660.—VOL. XVIII.

London, Saturday, April 15, 1848.

[PRICE 6D.

### SILVER VALLEY, CALSTOCK.—SIMS'S COMBINED CYLINDER-ENGINE, WATER-WHEELS, MINE MATERIALS, &c.

GEORGE CARINE.

Respectfully announces he is honoured with instructions from the directors of the SILVER VALLEY MINING COMPANY, TO SELL, BY PUBLIC AUCTION, without the least reserve, at the MINE, on Tuesday and Wednesday, the 2d and 3d of May, the valuable

#### STEAM-ENGINE.

WATER-WHEELS, PLANT, AND MATERIALS,

COMPRISING

120 Fathoms of 6, 9, 10, 12, and 13-inch	150 Fathoms of ladders
pumps, with working barrels	Sheaves, of various sizes
Windows	150 Fathoms of BB capstan chain
Matching-pieces	200 Fathoms of whin-chain
Clocks or pieces	Quantity of new and used rope
Seatings and glands	Bell and stand
Plunger Poles Stocked	Large parcel of board & timber footways
50 Fathoms of 8 and 10-inch main-rod	Casings and dividings of the shafts
2 Excellent capstans	Cisterns
2 Shears, with pulleys, complete	Several beams, scales, weights, and stands
3 Horse-whims, with poppet-heads and pulleys	Dressing-floor, buddies, frames, racking-tables, kieves and hatches
2 Balance-bobs	Several wood houses
1 Angle, or V-bob	Knocker lines
100 Fathoms of horizontal-rods, strapping-plates, pulleys, braces, and stands	Shaft gis
Powder-wrench and beam	

### COUNT-HOUSE FURNITURE, IMPLEMENTS AND FITTINGS OF ASSAY-OFFICE.

SMITHY—33 anvils, horse, vice, ring and hibbie moulds, plates and taps, screw stock, Bannister's bellows, 45 and 36 inches, cranes, new iron, bolts and burrs, scrap-iron, excellent tools, &c.

CARPENTERS' SHOP—Quantity of barrels, 3 benches, cross-cut-saws, saw-pit, plank, &c.

THEODOLITE DIAL and QUADRANT, set of mathematical instruments, &c.

TWO WATER-WHEELS, of 18 and 22-feet diameter, and 25-inch breast, with the 12

stamp-heads, axles, tappets, lifters, &c., attached; and the

#### COMBINED CYLINDER-ENGINE

(equal to 50-inch cylinder), on Sims's Patent, erected by Mr. William West, about two years since, and now in perfect working order, together with the boiler, about 10 tons, and the well and condensing work.

The mine is situated about two miles from Callington, seven from Tavistock, and three from the quays on the Tamar, where every facility is obtainable for shipping heavy weights. The road adjoins the mine.

G. C. respectfully calls the attention of mine agents to this very valuable machinery, which has been in use only about two years, and is, for all mine purposes, as good as new.—Catalogues will be ready for delivery on Thursday, the 27th inst. (on and after which day the whole will be on view), and may be obtained at the West Arion Office, Truro; Bedford Hotel, and Queen's Head, Tavistock; Wobbs's Hotel, and the Fountain Inn, Liskeard; at the company's office, 44, Finsbury-square, London; or Mr. J. Peter, the purser, Callington; or of the auctioneer, at his office, 26, George-street, Plymouth.

Refreshments at Eleven.—The sale will commence each day at noon precisely.

Dated, 20, George-street, Plymouth, April 12, 1848.

### SARK MINING COMPANY.—SALE OF MATERIALS

Comprising a PUMPING-ENGINE, 45-inch cylinder, 9 ft. stroke, with two boilers, of about 50 tons, with steam-chest, 15 feet long, 2-feet 6-inch diameter.

A WHIRL-ENGINE, 18-inch cylinder, 4 ft. stroke (double), with two boilers, of about 7 tons.

A CRUSHING-MACHINE, complete, one pair of rollers, worked by a water-wheel, 22-feet diameter, 2-feet breast, with a stamp-axe, to work six heads, attached.

25 fathoms 12-inch pumps; 57 ditto 9-inch ditto; 24 ditto 8-inch ditto; 18 ditto 6-inch ditto; 34 ditto 5-inch ditto; 17 ditto 4-inch ditto.

12-inch planter, case, &c., complete; 10-inch ditto ditto; 1 9-inch ditto ditto; 8 8-inch ditto ditto; 1 8-inch ditto ditto.

1 8-inch working barrel, complete; 1 6-inch ditto ditto; 2 4 1/2-inch ditto ditto.

115 fathoms of 8, 9, 10, and 11-inch shaft-rods (wood).

50 pairs best iron strapping-plates, about 6 tons.

40 fathoms of 4 1/2-inch lead-and-rod (iron).

99 fathoms 4-inch and 18-inch horizontal-rods (iron).

45 cast-iron and whin-chain pulleys; 100 fathoms 4-inch whin chain.

4-pair steels, 66 feet, with sheaves and brasses, complete.

Large quantity of useful iron and materials, fittings of office, complete set of smith's tools, turning-lathes, and many other articles.

For further particulars apply to A. J. Le Mesurier, Esq., Guernsey; or to Mr. Matthew Loam, Liskeard, Cornwall.

### TO RAILWAY CONTRACTORS AND OTHERS.—

TO BE DISPOSED OF, BY PRIVATE SALE, A LOCOMOTIVE ENGINE, with six 4-feet wheels, connected, cylinders outside, 14 inches diameter, and 2 feet stroke. A 100-ton TENDER, with six wheels, and capable of holding 1200 gallons of water. Both the engine and tender are in a good condition, having been in use not more than six months, and are well worth the attention of those to whom power is more an object than speed.

Further particulars may be learned by applying to Mr. John Lancaster, Kirkless Hall Colliery, near Wigan, where the engine, &c., may be seen.

### VALUABLE SEA-SALE COLLIERIES TO BE LET.—

TO BE LET, and entered upon on the 1st of July next, the valuable current-working COLLIERIES of EVENWOOD and NORWOOD, in the county of Durham.

These collieries are situated upon the line of the Stockton and Darlington Railway, by which the coals are conveyed to the shipping ports of Stockton and Middlesborough; and also, by means of this, and the York and Newcastle, and Leeds and Thirsk Railways, the coals have access to the important land-sea trade of Northallerton, Thirsk, Ripon, York, the lead-mining districts, and other towns in Yorkshire, and for shipment on the Ouse; and, by means of the proposed Northern Counties Union Railway, with the important land-sea trade of the western parts of Yorkshire and Westmoreland.

The royalties are very extensive. Two seams of coal are in working—one upwards of 6 feet, and the other of 3 feet. The pits are at a moderate depth from the surface, and the coal is worked at an exceedingly cheap rate, and is much prized as a household coal, both for exports and land-sale.

The existing tenant has the option of taking what stock he may require, at a valuation; and the amount of capital required to enter upon the collieries will be of very small amount.

For particulars apply to Thomas Wheldon, Esq., Barnard Castle; or to Nicholas Wood, Esq., Newcastle-upon-Tyne. Newcastle, March 3, 1848.

### EXTENSIVE IRON-WORKS.—FOR SALE, BY PRIVATE BARGAIN, THE BLAIR IRON-WORKS, belonging to the Ayrshire Iron Company, situated in the parish of Dalry, and county of Ayr.

These works, which have been recently erected at an immense cost, consist of two blowing-engines, five blast-furnaces, workmen's houses, steam-engines for working the furnaces, together with utensils at the pits, furnaces, &c., all in working order, and capable of producing upwards of 35,000 tons of pig-iron per annum.

One of the blowing engines, high-pressure, estimated at 90-horse power, was erected in 1841; the other, a condensing engine, was erected in 1847, and is estimated at 200-horse power, the latter being capable of blowing five furnaces, and both fitted up in the most substantial manner, and at present in the best working condition.

The furnaces have been erected with the greatest care, and are fitted with air-heating apparatus of the most approved construction. The make of each furnace has generally averaged upwards of 150 tons of iron per week, and some of them have produced 180.

There are, besides the manager's house and store buildings, 187 workmen's houses, in a habitable state, attached to the furnaces and pits, and there are 20 partly built, which could be finished at a small additional outlay. There are also a new foundry, wright shop, fire-brick work, smithy, &c.

The MINERAL FIELDS, consist of COAL, IRONSTONE, LIMESTONE, and FIRE-CLAY, held in lease, by the company, at moderate fixed rents and royalties, all situated within easy distances of the furnaces, and for the most part have the advantage of railway communication.

The COAL-FIELDS consist of several hundred acres, of which only a small portion has been wrought. Several pits, fitted with good engines and machinery, are sunk to the coal, and partly in operation.

The IRONSTONE consists of the well-known black-band, yielding about 3000 tons of calcined stone per acre; and it has been estimated that there are 300 acres or thereby still to work—besides which, there is a large extent of clay-band ironstone, hitherto little wrought, but capable of yielding a large output. There are 15 pits, with excellent steam-engines—some of them in present operation, and others ready to resume work.

The LIMESTONE QUARRY is worked by open cast, and is connected with the works by railway.

The FIRE-CLAY is abundant, of excellent quality, and cheaply produced.

The Glasgow, Paisley, Kilmarnock, and Ayr Railway (extending to Carlisle), passes close to, and has connection with, the furnaces—by means of which, and others in connection with it, the produce can be conveyed to the city and port of Glasgow (22 miles off), and to the seaports on the Ayrshire coast, each within a few miles of the works.

There is a large stock of calcined ironstone, coal, and limestone on the ground, so that the works may be put into immediate operation, and, under judicious management, the manufacture of pig-iron may be carried on to the greatest advantage. The concern will be found to be well worth the attention of persons having the requisite capital, and affords an opportunity of entering into the business sedulously to be met with.

MALEABLE IRON-WORKS.—Considerable progress has been made in the erection of extensive malleable works, which, when completed, will be capable of turning out 300 tons of bar-iron weekly. The most of the necessary machinery has been prepared by the contractors; and a portion of the work could be brought into operation in a few months to produce the half of the above estimate. This work is nearly adjoining the F. & W. Iron-Works, and connected by railway, and will be sold either together therewith or separately.

Plans of the property and mineral workings lie for inspection at the Ayrshire Iron Co. offices, 115, St. Vincent-street, Glasgow, where, on application to Mr. Brown, every necessary information will be afforded, and orders given for inspection of the works.

### WINDMILL.—TO BE SOLD, A HEAD of an excellent

kerb, 14 feet diameter, and frame work, complete.

BREAK-WHEEL, 4-feet 10-inch diameter.

WIND-SHAFT, adapted for patient adjusting sails; and waller 5-feet 3-inch diameter; and upright shaft (hollow), 10 inches diameter, and 56 feet in length; step brass and iron—wheels all of cast-iron, pitched and trimmed; with brasses and plummer-boxes—all in excellent order, for immediate use. The above was erected in 1835.

Also, 160 SHUTTERS, with brass thimbles and iron cranks, fitted new in 1845, for 10 feet width of sail.

For particulars, apply to Mr. John Jeffries, Grove Iron Foundry, Southwark.

### TO IRONMASTERS AND CAPITALISTS.—WANTED

an ENGAGEMENT, by a person of middle age (son of a deputy against the iron

ta.), with 30 years' experience, as MANAGER of MINES and IRON-WORKS, of which he has erected several in the Midland Counties, and in Wales.—Address "A. B." Post-office, St. Clears, Carmarthenshire.

### FOR SALE, BY PRIVATE CONTRACT, a NEARLY NEW

ENGINE, on the combined principle of Messrs. Harvey and Co., from the drawings of Mr. W. West, with 60 and 32-inch cylinders—equal to 141-horse power.

Apply to Mr. P. N. Johnson, 79, Hailey-garden, London.

### TO BE SOLD, a 40-horse power HIGH-PRESSURE STEAM-ENGINE, with ONE BOILER, equal to 20-horse. The engine is quite new, and not now being wanted, will be sold cheap.—Apply to Mr. Charles Sanderson, Sheffield.

### STEAM-ENGINES.—From 8 to 20-horse power ENGINES

ALWAYS IN STOCK.

Apply to Mr. CAPPER, Engine-Maker and Founder, BIRMINGHAM.

Price—£12 to £16; with boiler, £32 per horse.

### BLAENGAWR STEAM COAL, CARDIFF—placed on

the List of Coals supplied, by Contract, to the Government.—ORDERS FOR THE

BLAENGAWR STEAM COAL RECEIVED BY Mr. W. F. STANTON, No. 9, LOVE-LANE, EASTCHEAP; or by Mr. George Sully, agent, 1, Bute-street, Cardiff, Glamorgan, South Wales.

### MINING OFFICES—ESTABLISHED FIVE YEARS.

THOMAS P. THOMAS begs to inform his friends and the public, that he has

REMOVED from No. 18, Threadneedle-street, to No. 3, GEORGE-YARD, LOMBARD-STREET, LONDON (late Messrs. Phillips and Tiplady's).

N.B.—Dealer in English and Foreign Funds, Mining, Railway, Gas, and other shares.

### WILLIAM W. TAYLOR & CO., MINERAL SURVEYORS,

MINING SHAREBROKERS, &c.

No. 2, ROYAL EXCHANGE-BUILDINGS, LONDON.

### MR. R. TREDDINICK, THREE KING'S COURT,

LOMBARD-STREET, LONDON.

CONTINUES to DEAL in every description of MINING, RAILWAY, BANKING, INSURANCE, CANAL, and OTHER SHARES.—Statistical information afforded gratuitously upon personal application.—MONEY ADVANCED upon the above securities.

### MR. JAMES STRIDE, PARLIAMENTARY AGENT,

ESTATE, and GENERAL AGENT. Has on SALE, SHARES in the best DIVIDEND-PAYING, and other MINES. The earliest and most authentic information; and the full benefit of the market value, afforded to buyers and sellers of mining and other property.

MINES INSPECTED AND REPORTED ON.—London, 35, Charing-cross.

### JAMES LANE, MINING SHARE DEALER

75, OLD BROAD-STREET, LONDON.

### WILSON & FRASER, 2, WELLINGTON-BUILDINGS,

LIVERPOOL, and 13, EXCHANGE-PLACE, GLASGOW, have always ON SALE

PIG-IRON, BAR-IRON, RAILWAY CHAIRS, and RAILWAY BARS.

### BRITISH MINING OFFICES—NOTICE.—The BUSINESS

of these OFFICES will henceforth BE CONDUCTED at No. 25, FLEET-STREET, LONDON, and No. 4, STAMP-OFFICE BUILDINGS, MANCHESTER, to either of which offices communications are requested to be addressed. The correspondence and reports on the accounts of the respective companies may be inspected at all times, on application.

WILLIAM SHEARMAN, JAMES TRUSCOTT.

**THE CHINESE FABLE OF THE CREATION.**—The rationalists have penetrated furthest into the Dædelian mystery of this cosmogony, and they go on, to show what Pwanku did, and how he did it. They picture him holding a chisel and mallet in his hands, splitting and fashioning vast masses of granite floating confusedly in space. Behind the openings his powerful hand has made are seen the sun, moon, and stars, monuments of his stupendous labours; and at his right hand, inseparable companions of his toils, but whose generation is left in obscurity, stands the dragon, the phoenix, and the tortoise, and sometimes the unicorn, divine types and progenitors with himself of the animal creation. His efforts were continued 18,000 years, and by small degrees he and his work increased; the heavens rose, the earth spread out and thickened, and Pwanku grew in stature, each of them 6 ft. every day, till his labours, he died for the benefit of his handiwork. His head became mountains, his breath wind and clouds, and his voice thunder; his limbs were changed into the four poles, his veins into rivers, his sinews into the undulations of the earth's surface, and his flesh into fields; his beard, like Berenice's hair, was turned into stars, his skin and hair into herbs and trees; and his teeth, bones, and marrow, into metals, rocks, and precious stones; his dropping sweat increased to rain, and lastly (*nascitur ridiculus mus*) the insects which stuck to his body were transformed into people.—*The Middle Kingdom.*

On the concealed cause that preys on the health and shortens the duration of human life.

Illustrated with numerous coloured engravings.—Just published, in a sealed envelope.

Price 2s. 6d., or free by post, 3s. 6d.

**CONTROL OF THE PASSIONS:** a Popular Essay on the Duties and Obligations of the Married State—the disqualifying impediments and consequent disappointment of marital anticipations—the physiology, use, and abuse of the passions—harmful results of pre-coital exertions and excesses—the concealed cause of sexual debility, and the infirmities of the reproductive organs—with advice to those suffering from excessive indulgence in a secret vice, or from infection; and remarks on gonorrhœa, gleet, stricture, and syphilis. Illustrated with coloured engravings and cases. By CHARLES LUCAS & CO., Consulting Surgeons, 60, Newman-street, Oxford-street, London, Member of the London College of Medicine, &c.

CONTENTS OF THE WORK.

Chap. 1. Bodily and mental exhaustion induced by inordinate indulgence of the passions, illustrated with coloured engravings.—Chap. 2. Banciful results of a secret vice on the mind and body, evidenced in the production of consumption, epilepsy, and other convulsive diseases. Insanity, idiocy, morbid melancholy, indigestion, stricture, impotence, and sterility, with observations on the duties of married life, and on the unhappiness caused by unfruitful unions.—Chap. 3. Debility and exhaustion of the principal vital functions, the nature and treatment of impotence and sterility, and the imperfect performance of the marital act, caused by the practice of self-indulgence.—Chap. 4. Gonorrhœa, its symptoms, complications, and treatment; gleet, stricture, and disease of the prostate.—Chap. 5. Syphilis, and its attendant maladies and treatment. Cases, and concluding observations, plates, &c.

Published by the authors, and sold by Brittan, 54, Paternoster-row; Hannay and Co., 63, Oxford-street, London; J. Gordon, 146, Leadenhall-street; G. Mansell, 115, Fleet-st.; Sanger, 150, Oxford-street, London; H. Winbush, 78, High-street, Birmingham; H. Whitmore, 119, Market-street, Manchester; J. Howell, 64, Church-street, Liverpool; W. and H. Robinson, 11, Grosvenor-street, Edinburgh; T. H. Powell, 10, Westmoreland-street, Dublin; and all booksellers.

Persons desirous of obtaining the above work, and not wishing to apply to a bookseller for the same, may, to ensure secrecy, have it directed from the authors, by enclosing 3s. 6d., or postage stamp to that amount.

At home from Ten till Two, and from Five till Eight. Immediate reply sent to all letters, containing the fee of £1 for advice, &c., 60, Newman-street, Oxford-street, London.

ON NERVOUS DEBILITY AND GENERATIVE DISEASES.

Just published, the thirty-fifth edition, improved edition, revised and corrected, 120 pages, price 2s. in a sealed envelope, or forwarded, post-paid, by the Authors, to any address, secure from observation, for 2s. 6d., in postage stamp, illustrated with numerous anatomical colour'd engravings, &c.

**MANHOOD:** the CAUSES of its PREMATURE DECLINE, with plain directions for its perfect restoration. A Medical Essay on those diseases of the Generative Organs, emanating from solitary and sedentary habits, indiscreet excesses, the effects of climate, and infection, &c., addressed to the sufferer in youth, manhood, and old age; with practical remarks on marriage, the treatment and cure of nervous and mental debility, impotency, syphilis, and other urogenital diseases, by which even the most shattered constitution may be restored, and reach the full period of life allotted to man. The whole illustrated with numerous anatomical engravings on steel, in colour, explaining the various functions, secretions, and structures of the reproductive organs in health and disease; with instructions for private correspondence, cases, &c.—By J. L. CURTIS & CO., Consulting Surgeons, 7, Frith-street, Soho-sq., London.

REVIEWS OF THE WORK.

We feel no hesitation in saying, that there is no member of society by whom the book will not be found useful—whether such person hold the relation of a parent, preceptor, or a clergyman.—*Sun, Evening Paper.*

**Curtis, On Manhood.** (Strange.)—Having for many years been the standard work on these diseases, its originality is apparent, and its perusal breathes consolation and hope to the mind of the patient.—*Naval and Military Gazette.*

**Manhood:** a medical work.—To the gay and thoughtless we trust this little work will serve as a beacon to warn them of the danger attendant upon the too rash indulgence of their passions—whilst to some it may serve as a monitor in the hour of temptation, and to the afflicted as a sure guide to health.—*Chronicle.*

**Manhood:** by J. L. Curtis and Co.—Their long experience and reputation in the treatment of these painful diseases is the patient's guarantee, and well deserves for the work its immense circulation.—*Era.*

Published by the authors, and may be had at their residence; sold also by Strange, 21, Paternoster-row, London; Heywood, Oldham-street, Manchester; Phillip, South Castle-street, Liverpool; Robinson, 11, Grosvenor-street, Edinburgh; Berry and Co., Capel-street, Dublin; and, in a sealed envelope, by all booksellers.

Illustrated by 26 Anatomical Coloured Engravings on Steel, On Physical Disqualifications—Generative Incapacity, and Impediments to Marriage. New Edition, enlarged to 196 pages.—Just published, price 2s. 6d., or by post, direct from the establishment, 3s. 6d. in postage stamp.

**THE SILENT FRIEND:** a medical work, on the infirmities and decay of the generative system, from excessive indulgence, infection, and the inordinate use of mercury, with remarks on marriage, and the means of obviating certain disqualifications, illustrated by 26 coloured engravings.—By R. & L. PERRY & Co., 19, Berners-street, Oxford-street, London. Published by the authors; sold by Strange, 21, Paternoster-row; Hannay, 63, and Sanger, 150, Oxford-street; Starke, 23, Tichborne-street, Haymarket; and Gordon 146, Leadenhall-street.

**PART THE FIRST** treats of the anatomy and physiology of the reproductive organs, and is illustrated by six coloured engravings.—**PART THE SECOND** treats of the consequences resulting from excessive indulgence, and their lamentable effects on the system, producing mental and bodily weakness, nervous excitement, and generative incapacity; it is illustrated by three explanatory engravings.—**PART THE THIRD** treats of the diseases resulting from infection, either in the primary or secondary form, and contains explicit directions for their treatment. The consequences of neglect, and of the abuse, of mercury are also clearly pointed out. This section is illustrated by 17 coloured engravings.—**PART THE FOURTH** treats of Perry's Preventative Lotion, by the use of which the dangers of infection are obviated. Its action is simple but sure; it combines with the virus chemically, and destroys its power on the system.—**PART THE FIFTH** is devoted to the consideration of marriage and its duties. The causes of unproductive unions are also considered, and the whole subject critically and philosophically inquired into.

**THE CORDIAL BALSAM OF SYRIACUM** is exclusively employed in treating nervous and sexual debility, impotence, &c., 11s. and 33s. per bottle.—**THE CONCENTRATED DETEATIVE ESSENCE**, an anti-syphilitic remedy, for purifying the blood in cases of infection, secondary symptoms, eruptions, and the abuse of mercury, 11s. and 33s. per bottle.—**PERRY'S PURIFYING SPECIFIC PILLS**, 2s. 9d., 4s. 6d., and 11s. per box—a certain remedy in gonorrhœa, gleet, stricture, and chronic inflammation of the bladder.—**PERRY'S PREVENTATIVE LOTION**, an application to obviate the dangers of infection on the system.—**PART THE SIXTH** is devoted to the consideration of marriage and its duties. The causes of unproductive unions are also considered, and the whole subject critically and philosophically inquired into.

Sold by Sutton and Co., 16, Bow Churchyard; W. Edwards, 67, St. Paul's Churchyard; Barley and Sons, Farringdon-street; Butler, 4, Cheapside; R. Johnston, 63, Cornhill; L. Hill, New Cross; W. B. Jones, chemist, Kingston; J. W. Tanner, Egham; S. Smith, Windsor; J. B. Shillcock, Bromley; T. Riches, London-street, Greenwich; T. Parkes, Woolwich; Ede and Co., Dorking; and John Thurlby, High street, Romford—of whom may be had the *Silent Friend*.

REMOVED TO NO. 37, BEDFORD-SQUARE, LONDON.

**DR. LAMBERT ON THE SECRET INFIRMITIES OF YOUTH AND Maturity,** With 47 coloured engravings on steel.

Just published, and may be had in French or English, in a sealed envelope, 2s. 6d.; or post-free, from the author, for forty-two stamps.

**SELF-PRESERVATION:** A Medical Treatise, on the Physiology of Marriage, and on the Secret Infirmities and Disorders of Youth and Maturity, usually acquired at an early period of life, which enervate the physical and mental powers, diminish and enfeeble the natural feelings, and exhaust the vital energies of Manhood; with Practical Observations on the Treatment of Nervous Debility, whether arising from these causes, close study, or the influence of tropical climates; local and constitutional weakness, syphilis, stricture, and all diseases and derangements resulting from indiscretions; with 40 coloured engravings, illustrating the Anatomy, Physiology, and Diseases of the Reproductive Organs, explaining their various structures, uses, and functions, and the injuries that are produced in them by solitary habits, excesses, and infection.

BY SAMUEL LAMBERT, M.D., 37, BEDFORD-SQUARE, LONDON.

Doctor of Medicine, Matriculated Member of the University of Edinburgh, Licentiate of Apothecaries' Hall, London, Honorary Member of the London Hospital Medical Society, &c.

REVIEWS OF THE WORK.

"The author of this singular and talented work is a legally qualified medical man, who has evidently had considerable experience in the treatment of the various disorders, arising from the follies and frailties of early indiscretion. The engravings are an invaluable addition, by demonstrating the consequences of excesses, which most act as a salutary warning to youth and maturity, and by its perusal, many questions may be satisfactorily replied to, that admit of no appeal, even to the most confidential friend."—*Era.*

"Unquestionably this is a most extraordinary and skilful work, and ought to be extensively circulated; for it is quite evident that there are peculiar habits acquired at public schools and private seminaries, which are totally unknown and concealed from the conductors of those establishments, and which cannot be too strongly reprobated and condemned. The engravings that accompany the work are clear and explanatory; and being written by a fully-qualified medical practitioner, will, doubtless, be the means of saving many a youth, as well as those of matured age, from the various evil consequences resulting from early indiscretions."—*Magnet.*

Sold by Kent and Richards, 52, Paternoster-row; Hannay, 63, Oxford-street; Starke, Tichborne-street, Haymarket; Mansell, 115, Fleet-street; Gordon, 146, Leadenhall-street; and, in most cases, from the author's residence, who may be consulted personally (or by letter) on these disorders daily, from 10 till 2, and from 5 till 8.

**HOLLOWAY'S PILLS, THE UNIVERSAL AND MOST POPULAR REMEDY FOR ALL DISEASES INCIDENT TO FEMALES.**—The invigorating and purifying qualities of this medicine are so peculiar that females of all ages, suffering from any of the diseases to which they are more particularly subject, may, with confidence, have recourse to it for relief, a few doses of which shortly alleviate their sufferings, and ultimately restore them to perfect health and strength. The ready to use and infallible, whether taken at the critical period of passing from childhood, or turning the meridian of life; and its beneficial effects are acknowledged by numerous mothers of families. Sold by all druggists; and at Professor Holloway's establishment, 244, Strand, London.

## Transactions of Scientific Bodies.

### MEETINGS DURING THE ENSUING WEEK.

THIS DAY	Asiatic—14, Grafton-street.	2 P.M.
MONDAY	Statistical—13, St. James's-square.	5 P.M.
	British Architects—16, Grosvenor-street.	8 P.M.
	Chemical—Society of Arts, Adelphi.	9 P.M.
	Medical—Bell-court, Fleet-street.	9 P.M.
TUESDAY	Linnean—Soho-square.	8 P.M.
	Horticultural—21, Regent-street.	3 P.M.
	Civil Engineers—25, Great George-street.	6 P.M.
WEDNESDAY	Geological—Somerset-house.	8 P.M.
	London Institution—Finsbury Circus.	7 P.M.
THURSDAY	Syro-Egyptian—71, Mortimer-street, Cavendish-square.	7 P.M.
SATURDAY	Royal Botanic—Inner Circle, Regent's-park.	8 P.M.
	Westminster Medical—17, Savile-row.	8 P.M.

### On Mining, & the Practical Applications of Geological Science.

PROFESSOR ANSTED'S LECTURES AT KING'S COLLEGE.

LECTURE XX.—MINING FOR METALS CONTINUED—NECESSITY OF GEOLOGICAL MAPS—VARIOUS KINDS OF MINING—OPEN WORKINGS—STOCK WORKS, &c.—DRAINAGE OF MINES.

Professor Ansted commenced this interesting lecture, by saying that he had

now arrived at the subject of working the mines—the actual economical operations by which the metalliferous ores were obtained; and which consisted of the removing of certain materials, the selection of such as were most valuable the choice of the spot at which it was best to work, the principles and practice of drainage and ventilation when the mines were sunk, and the modes of obtaining the ore which different and varied circumstances might render it admirable and convenient to adopt.

Before considering these details of practical science, it was necessary to call attention to the extreme importance of geological maps and sections, because much knowledge might be exhibited in this form, and thus be rendered available for the purposes of instruction, besides enabling the miner to understand and recall it himself. The advantage of good geological maps and sections under any circumstances, was extremely great; but in a district in which mining operations were to be carried on, their absolute necessity was unquestionable. In them was recorded every kind of information respecting the surface—a matter of great moment in the direction of all mining operations; and also the names, nature, and succession of the rocks. By their means, also, we were enabled to understand, in general, the true construction of the earth's crust at the spot selected for sinking, or for other works.

Having learned generally, not only those facts determinable alone by geological observations and on geological grounds, but the circumstances connected with whatever mines might already exist in the adjoining districts; the next thing to be considered by the miner was the particular spot at which it would be advisable to commence operations to obtain the contents of a vein known to exist.

And here, again, the study of the geological map was indispensable to trace the actual position of the lodes, and thus enable the miner to carry his works through as many of them as possible, at the least expense.

In order to illustrate his meaning, he had placed upon the table, one of the geological maps of the Ordnance Survey, representing a portion of the northern part of Cornwall. He had selected this particular part of the county, because it was not so eminently a mining district as some of the more southern parts. In the latter, so many trials had been made, and the deeper parts of the earth's surface had been pierced so frequently, that everything relating to it was now known. In the north of the county that was not so generally the case, and there was there a great tract of ground which offered a fair prospect to mining speculations, as it had not been so much tried, and yet promised well for many important ores. The map now before them exhibited a country pretty much of one material (Devonian schist), but with granite appearing here and there—the difference being shown at a glance by the change of colour. To look at an ordinary map of Cornwall, there would be nothing to lead to the conclusion that it was a mining district, except the fact that it was hilly; but it was well known that this was no very important indication, since it was by no means necessary that where there were hills there must also be metalliferous produce. The system of colouring adopted in geological maps would, however, show the nature of the hills, and that they contained rocks of igneous origin, and then it would be understood, from what he had said in former lectures, that there were greater probabilities of metals being found.

Looking at the map before them, it would be seen, that the granite protruding through the other material at so many points was connected with the general structure of the country. It would be seen, that these granitic ridges were in one main direction, and that was a direction which promised a large amount of mineral produce; indeed, the construction being precisely similar, it seemed probable that the northern part of the county might be as valuable as the southern. Looking still further at these granitic lines, it would be found, that they had definite compass bearings; and the whole physical and geological features of the country, disclosed by the map, pointed it out as one likely to contain mineral produce; while the sections taken of the same district tended strongly to a similar conclusion. If this district, as depicted by the Ordnance map, were compared with one which was wholly agricultural, where the surface was covered with a thick vegetable soil, reposing upon rocks of the secondary period, it would present a very marked contrast. In the first place, there would be no granite, and the physical features of the country would not be marked in the same way; there would be nothing like the lines of igneous rocks, with definite east and west compass bearings. There might be as much hill and dale, and more broken and mountainous ground, than in Cornwall; but the geological conditions would not offer the slightest chance for the establishment of profitable workings of this kind. A geological map helped us, therefore, to conclusions as to the real state of the case, in reference to mineral veins—it pointed out the general direction of all the veins, and of everything important in the district—the direction of all the rocks which had reference to veins—and it gave all the information which could be obtained, by laying bare the structure of the country. This was of great utility; and, indeed, without it, they would be mining in the dark, and going on from point to point, instead of taking a general view. In old workings, this kind of knowledge was equally necessary and important—for, without it, there were no true means of determining the real nature of veins and faults, and the prospects of trial workings.

Knowing, then, from maps and observation, all the various circumstances and conditions connected with the structure of the country, they would be ready to commence working. There were two or three distinct kinds of working, and the mode in which the mine must be commenced depended upon the way in which the ore presented itself. If it consisted of a great mass near the surface, it must obviously be attacked in a different manner than that required by a vein, irregular and expanding at great depths. Thin veins, too, were commonly more variable, being sometimes rich and sometimes poor, liable to be nipped in and lost, and requiring to be looked for again. The working of thin veins thus called for special contrivances, and greater knowledge of mining; and the methods usually employed he might describe as three in number, and those related—first, to large masses near the surface, obtained by open workings; secondly, to true veins, having considerable magnitude and thickness; and, lastly, to small, or moderate-sized veins. Of these, the two former were not much followed in England—nearly all our metallic produce being obtained from comparatively small veins, although occasionally they were extended into nests and pockets of considerable size.

Open workings were of several distinct kinds. The first he would mention, were those in which the ore was not contained in lodes at all, as was the case with stream-works, where the metal was washed out of metalliferous sands, or where the ore, mixed with veinstone, had been exposed naturally to the action of running water, and had been separated, or, in some cases, remained with sand and gravel. It was, however, only worth while to wash sand in the case of metals of great specific gravity. If, for example, the specific gravity of the metallic ore were only half as much again as that of the stone with which it was associated, this operation was hardly profitable; but when much heavier, as in gold, or platinum, the separation might be readily made. Sometimes this was done by Nature, and considerable quantities of ore were found accumulated in the course of ages in many spots. There were many of these stream works in Cornwall, where very extensive metalliferous deposits existed; these chiefly produced tin, the ores of that metal being very heavy. Stream-works were the simplest of open workings, and amongst them might be classed the washings of auriferous sands found in stratified beds, as in the gold mines of the Ural. Great quantities of gold and platinum were found in the sand, and obtained by washing. In such cases the ore had been originally derived from the rocks beneath, such as porphyry, quartz, iron pyrites, or clay slate, which in the course of ages became disintegrated, and partly carried to a short distance, the gold being left behind. After a certain quantity of this auriferous detritus had accumulated, it had, in some cases (as in the diagram pointed to by the professor), become covered by vegetable mould. It sometimes happened that, in consequence of this concealment, it was necessary to examine very carefully this golden gravel, and many attempts might be made before a rich portion of the deposit was discovered. There were gold washings also in South America, where there were more than 100 square miles capable of yielding auriferous sand. On the other hand, there were other large districts where, although gold was certainly present, the quantity obtained was not large enough to pay the expenses. In our own country, we had gold in Wales, and some in Ireland, and in the north of England; but the expense of working it had, in most cases, proved too considerable to return a profit. This was an exemplification of the old proverb—"Gold may be bought too dear!" This

vapour, by passing it through the pale and almost invisible flame of hydrogen, which, when thus combined, gave out a volume of light, which gradually and steadily increased in vividness, until the eye could no longer bear its dazzling brightness.]

The next constituent was *carbonic oxide*. Carbon combined with oxygen in two proportions, forming two compound gases; the one containing the smallest proportion of oxygen was called *carbonic oxide*; and the other, containing the largest proportion, *carbonic acid*, which appeared as the last item in the table. Both these gases were colourless, but their properties exhibited a striking difference. Carbonic acid was not inflammable, whilst carbonic oxide burnt with a pale blue flame, of little or no luminous power. Again, the latter was quite insoluble in water, while the former dissolved, particularly when the water contained a little alkali, so rapidly as to form a vacuum.—[This was illustrated by experiment]. This solubility rendered easy the removal of carbonic acid from coal gas; but no method had been discovered of separating carbonic oxide, which burns with gas, though it adds nothing to its illuminating power.

The other gases were produced in the distillation of coal gas in very small quantities; he should, therefore, only briefly notice them. There were two more compounds of carbon—the one with nitrogen, and the other with sulphur; the former of these was called *cyanogen*, and the latter *sulphide of carbon*. Cyanogen was distinguished by its beautiful violet flame—carbonic acid being produced in its combustion, and nitrogen set free. It was also remarkable for its solubility in alkalies—cyanide of potassium being produced, which, with iron salts, yielded Prussian blue. This gas occurred in coal gas, in such small quantities that its presence might, for a long time, have remained unknown, but for the very delicate test chemists possessed for cyanogen, by which the smallest traces could be detected. Sulphide of carbon was highly inflammable, burning with a blue flame, and producing carbonic and sulphureous acids. These substances had been actually found in coal gas, though they were by no means produced from every kind of coal.

The next substance on the list, *sulphureted hydrogen*, was, however, invariably generated, and that too frequently in considerable quantities. Sulphurets of iron, or iron pyrites, which were disseminated through the mass of the coal, was the source of this gas; and its quantity, therefore, depended upon the amount of that mineral in the coal. Sulphureted hydrogen was also the offensive principle in the exhalations from putrefying substances containing sulphur. Sulphureted hydrogen was a colourless gas, burning with a pale blue flame. It had not only a most offensive odour, but produced a most deleterious effect upon health, even when mixed with a large proportion of atmospheric air. He had frequently witnessed, in the laboratory, fainting produced by the inspiration of this gas inadvertently. Professor Faraday had proved, that a dog would die in an atmosphere of which 1-500th was this gas; and that a bird could not exist if the gas formed only 1-500th of its breathing medium. Fortunately, this gas was converted, by combustion, into sulphureus acid, which was very much less dangerous and offensive. It was necessary, however, in making coal gas, to obliterate every trace of sulphureted hydrogen, for the sulphurets acid it produced, although far less injurious, independently of its effect upon health, attacked very readily every metallic surface.

The presence of sulphureted hydrogen which would escape unburnt between the turning of the cock and the ignition of the gas at the burner, and by leakage, was sufficient to destroy lead, painted, gilt, or silvered articles, in a very short time. The presence of sulphureted hydrogen might easily be detected in gas, by submitting a piece of paper, impregnated with the solution of acetate of lead, to the gas unburned. [The lecturer applied a piece of paper, thus prepared, to the gas by which the lecture was lighted, and declared, amidst the applause of the company, that it was perfectly free from any trace of sulphureted hydrogen.]

Another product, largely found in the distillation of coal gas, was *ammonia*, into which nearly all the nitrogen contained in coal was converted. Ammonia was a colourless gas, which, of itself, was very difficult to inflame, though, when mixed with other combustible gases, it was entirely combustible. Respecting the products of the combustion of ammonia, accurate experiments were still wanting. According to all known analogies, they were certainly water and nitrogen. Many works had stated that nitric acid was also produced; but he could find no actual grounds for this; and he believed, like many other such statements, it had been copied from work to work, and repeated until it had become received as a well-established fact, without the slightest claim to such a consideration.

In all his experiments, he had never been able to find the smallest trace of nitric acid. Ammonial gas was very soluble in water, more so still in acids. The great avidity with which it was thus absorbed, rendered its separation from coal gas very easy.

*Sulphureous acid* was the product of the combustion of sulphur in the coal; and *hydrochloric acid* from the decomposition of some chlorides, when they were present in the coal.

*Aqueous vapour* was the rest of moisture in the coal. The *nitrogen* in coal gas was the residue of the atmospheric air contained in the retort—the oxygen of which was expended in converting a portion of the carbon and sulphur of the coal into carbonic oxide, carbonic acid, and sulphureous acid. Nitrogen was a colourless, transparent, and incom-  
bustible gas, which, being soluble neither in acids nor water, could not be separated from the coal gas. *Carbonic acid* had been considered with carbonic oxide, and that completed the whole of the constituents of coal gas.

Having given a brief account of the individual substances which were produced in the distillation of coal, the talented lecturer then took a retrospective glance of them all. The illuminating principles of coal gas were olephant gas and the vapours of volatile hydrocarbons: there were also three other gases burning in the coal-gas flame—namely, hydrogen, carburetted marsh gas, and carbonic oxide. Besides these, the gas which was actually burnt might contain traces of sulphuret of carbon and nitrogen, all the rest being leen, or ought to have been, perfectly separated in the different processes of purification which the gas had to undergo. During the progress of the foregoing short description, the audience had already become acquainted with the manner in which these constituents singly burnt, but they would best obtain a correct idea of the contribution affected by each, and the illuminating powers of coal gas, if they were all lighted at once. [Dr. Hoffman then lighted the burners attached to the vessels containing the separate constituents, so as to afford a view, at the same moment, of all the various flames.]

By the process of purification which coal gas underwent before it was fit for use, the cyanogen compounds, the sulphureted hydrogen, the ammonia, the sulphureous acid, and the hydro-chloric and carburetted acids were separated; and he proceeded to illustrate this process by passing coal gas, containing several of the above gases, through lime water mixed with a little potash; after which the liquid, which before the lime, became quite turbid, and the gas no longer contained the deleterious constituents.

The talented lecturer then proceeded to devote a few moments to describing the manner in which the distillation was effected on a large scale. In the infancy of the manufacture, the coals were distilled in iron pots, but now iron vessels of a cylindrical form were used. These were placed horizontally in a furnace—one fire heating five of these retorts. The shape of the cylinders was not unimportant; and, after various changes, ear-shaped cylinders were now generally preferred—it being surface being greater than that of any other. The front of the retort, or mouth-piece, was it was technically called, was fixed by screws—iron cement being placed between the fingers to render it air-tight.

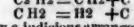
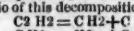
[These arrangements, as well as that by which the lid was fixed, were illustrated by drawings and a model.] The lid being fixed, the gas passed through a system of pipes into what was called the hydraulic main—a long, wide, horizontal pipe, half filled with water. Each retort was thus perfectly isolated, and the end of the pipe being kept immersed in the water in the hydraulic main, any one of them might be opened, in order to charge it afresh, without fear of the gas already generated rushing back through the opening. The temperature of the hydraulic main being comparatively low, a large quantity of heat and ammonia water was collected in this tube, which flowed into cisterns erected for the purpose. From the hydraulic main the gas passed into a system of refrigerating pipes—the temperature of which was kept low by a constant current of water, whereby another quantity of tar and ammonia was separated. The gas entered next into the purifiers, respecting which he could not now enter into the various ingenious contrivances proposed by various clever gas engineers and chemists. It would, perhaps, suffice, if he stated merely, that now the gas was forced through hydrate of lime, merely moistened with water.

In conclusion, he begged to offer some general remarks upon the combustion of coal gas. In enumerating the constituents of coal gas, he had pointed out those compounds which must be considered as impurities, and which must be separated before combustion took place; but, at the same time, there were others, contributing little or nothing to the illuminating power of the gas, which, when once formed, could not be separated from the gas. These were hydrogen, marsh gas, and carbonic oxide. Were these, then, to be considered as impurities? If the gas were used for illuminating purposes, to a certain extent, at least, they must be considered as impurities, because they were burnt, and in their combustion, a large amount of heat was evolved; the products of their combustion impaired the salubrity of the atmosphere in which such a light was burning, and no actual benefit or increase to the illuminating power was derived from them. If, then, there were no means of separating these substances when once formed, an effort should be made to prevent their formation. With regard to carbonic oxide, it would be difficult to find a method which secured us against its formation—the entrance of the retort, while being charged, being in communication with the atmosphere. It was, however, the power of the gas manufacturer to diminish the amount of carburetted hydrogen, and especially of hydrogen. If the temperature of the retort were too high, a large quantity of the olephant gas contained in the coal would be converted into marsh gas, or even into hydrogen. That this was often actually the case, appeared in a most striking manner, from the following analysis, made long ago, by Dr. Henry, of coal gas made from Wigan coal:—

#### Analysis of Gas from Wigan Cannel Coal.

	Specific Gravity.	C H, or ole-	C H <sub>2</sub> , or	C O.	H.	N.
	0.650	13	82.5	3.2	0	1.3
In the first hour	0.620	12	72	1.9	8.8	5.3
	0.630	12	58	12.3	16	1.7
5 Hours after the com-	0.500	7	56	11	21.3	4.7
10 <sup>th</sup> incurrence	0.345	0	20	10	60	10

It would be seen by this table, that it was of the greatest importance that the heat in the manufacture of gas should not be carried to too great an extent. In the first hour, 12 parts of olephant gas, and 72 of marsh gas, were evolved—while only eight of hydrogen were generated. At the end of 10 hours, not a vestige of olephant gas was traceable; while the hydrogen amounted to 60—evidently the consequence of the olephant gas being decomposed by the excess of heat. It had been found that, if pure olephant gas were passed through a particular temperature, it became changed into light carburetted hydrogen and carbon. The ratio of this decomposition was as follows:—



So that it would be seen, that by a judicious arrangement of the heat of the retorts, the production of hydrogen and light carburetted hydrogen, which increased the bulk without increasing the illuminating power, might be kept within certain limits. A very small quantity of these substances might be present in coal gas without injurious effects, as they then served for the suspension of the vapours of the oily hydrocarbons. A mixture, indeed, of these vapours with carburetted hydrogen, in due proportions, might be considered as an equivalent to olephant gas. Benzol, for instance, contained 92 per cent. of carbon; while olephant gas itself contained only 85 per cent., and carburetted hydrogen only 75 per cent.; and, therefore, by an admixture of the latter with Benzol, the illuminating power of olephant gas might be obtained. Here, again, he would mention the beautiful process proposed by Mr. Low, for increasing the illuminating power of coal gas, based upon the most scientific principles. If he wanted to express its nature in a sentence, he should say it was a process for converting a mixture of hydrogen and light carburetted hydrogen, by passing it through naphtha, into pure olephant gas.

This naturally led to the question—Why did hydrogen possess no illuminating power at all? and why was the illuminating power of marsh gas so far short of the beautiful light produced by a jet of olephant gas?—and, briefly, in what consisted the illuminating power of olephant gas? The illuminating power of gas depended upon a portion of it being separated in the solid form, which, being deposited at a certain distance between the orifice of the burner and the rim of the flame, entered into a state of ignition, from which the light emanated. Now, the composition of coal gas was such, that if it were allowed to issue from a convenient burner, a complete combustion of the hydrogen was obtained, but only a partial one of the carbon. Another portion was separated—that which entered into a state of ignition being heated to a white heat before it reached at sufficient temperature for its combustion.

In the flame of coal gas, three different parts, or cones, might be distinguished. Immediately over the burner, it was principally hydrogen which was burnt, along with a little carbon, whilst the main portion of the carbon being thus set free, was ignited in the second cone, and consumed with the rest of the hydrogen in the outer flame. By a simple arrangement, the illuminating power of the coal-gas might be destroyed altogether—namely, by mixing it, previous to combustion, with a sufficient amount of air to produce a complete combustion. The illuminating power of coal-gas—and, in fact, of

any flame—depended entirely upon the deposition of a fixed body in the flame. It was by no means necessary that this body should be carbon. It might be anything else—such as lime, iron, &c.—[The talented lecturer then rendered the flame of hydrogen luminous, by passing through it a chloro-chromic acid; and this interesting lecture was concluded by several clever experiments, illustrative of the various subjects it embraced.]

#### GEOLOGICAL SOCIETY.

APRIL 5.—Sir H. T. DE LA BECHE (President) in the chair.

J. M'ADAM, Esq., and R. W. MYLNE, Esq., were elected Fellows.

A Sketch of the Structure of the Country extending from Cadair Idris to Moel Siabod, by J. B. Jukes, Esq., and A. R. SELWYN, Esq., was read. This paper contained the results obtained by the geological survey up to the close of 1847. The rocks composing the district form the following three groups in the ascending order:—A. The Barmouth and Harlech sandstones, forming a mass of quartzose sandstones, and conglomerates, with some beds of blue and purple slates, which in several places have been quarried for economical purposes. Their approximate thickness is estimated at upwards of 3000 ft.; no organic remains have hitherto been found in them.—B. The Trappean group, consisting of blue and grey slates and flagstones, sometimes slightly arenaceous, interstratified with many beds and masses of a grey calcareo-felspathic ash, often crystalline, together with felspathic trap and greenstone; 2. Of great masses of felspar porphyry, with some greenstone and felspathic ash, often crystalline, and forming beds from a few inches to many feet in thickness. Interstratified with the latter, and passing into them, and especially into the ash, by imperceptible gradations, are many beds of black slates, forming often irregular and apparently lenticular masses. This group is estimated at 15,000 ft. thick, and in the lower part contains lignite in great abundance, with a few other fossils; in the upper part lignite and graptolites, but not very numerous.—C. The Bala group, consisting of 1. Of very fine-grained black slates, showing few traces of lamination, or having it greatly obscured by joints and cleavage; 2. Of a fine-grained grey arenaceous slate rock, often passing into gritstone, and containing below one or two beds of ash, and near the centre one thin bed of limestone. The whole group is 9000 ft. thick. In the first, or lower division, organic remains are rare, but are very abundant in the second division, especially in the central limestone—the Bala limestone of Prof. Sedgwick. About 500 ft. below this stratum a bed of trappean ash almost invariably occurs; and from this and other characters the authors have been enabled to identify the limestone wherever it occurs, and to show that the so-called Bala, Rhinwlas, Llywngwyn, and Eglwys limestone are only broken portions of one bed. They also consider the first group, or the Barmouth sandstones, as forming a true base for the Silurian system.

any disease; that, during storms, a portion of the atmosphere is converted into nitrous acid by reversing the proportions—viz.: from 91 oxygen, 79 nitrogen (atmospheric air), to 79 oxygen, 91 nitrogen (nitrous acid); and that Dr. Carmichael Smith, successfully employed nitrous, or nitric, acid in eradicating a malignant fever which broke out on board the British fleet—Dr. Murray considers that these acids, and gaseous chlorine, can at present be considered the only true disinfectants. He also considers the use of a large electrical plate machine, worked by a small steam-engine, in hospitals, as a representative of the thunder-storm, would be attended with remarkable results. The following is Dr. Murray's plan for the production of gaseous chlorine:—Pour into a teacup, containing a little black oxide of manganese, a small quantity of muriatic acid—two or three tea-spoonsfuls of the former to about half a wine-glassful of the latter—stir the mixture with a splinter of wood, or stem of a tobacco-pipe. If found too powerful, remove the cup and cover it. Replace the cup when wanted, and renew the ingredients when they cease to give off chlorine—both of these materials are very inexpensive. All metallic furniture must be removed from the influence of the gas. The cup may be used in the patient's room, or the 'landing' on the staircase, or lobby, as the case may require.

#### The Metallurgical Treatment of Ores.

[Continued from April 8.]—No. XIV.

GOLD is generally found in Nature in the metallic state, which at once explains why it has been known to mankind from the earliest ages, and why also it has been the metal almost exclusively worked by savage nations.

It is found crystallized in cubes and octohedra, or in forms derived from them; it also occurs in lamellar scales, and branch-like forms, and, lastly, in grains, or masses, known as *pebbles*. These pebbles are often of very remarkable size—M. Humboldt mentions one, found in Peru, as weighing 26 lbs. Another, also, was found in the province of Quito, said to weigh 110 lbs.; and, lastly, within the last few years, masses of gold have been found in Siberia, which have rendered our former examples less extraordinary.

Native gold is not always pure; it is, in the greater number of cases, combined with a certain quantity of silver:—[Indeed, we may consider these two metals nearly constant in the same locality; and, inso much so, that in the countries where gold is collected in various divisions, or cantons, the assayer can tell, from the composition of any sample, the division in which it was collected. Gold generally combines with silver in definite proportions; they are, however, very varied, and there has been only one of these compounds distinguished by a particular name, and that is the *electrum* of the older mineralogists.

The following are analyses of electrum, or argentiferous gold:—

Gold ..... 64 ..... 74.1  
Silver ..... 36 ..... 23.12

100 Klaproth. 97.93 Rose.

The following are analyses of native gold, by Bousingault:—

No. 1. Gold, 8824; silver, 1176=10,000. This sample was from Malpaso, near Marita (South America); it was found in flattened grains, of a deep yellow colour. Its specific gravity was 14.706.

2. Gold, 8858; silver, 1142=10,000. Native, from Llano (South America); termed *colorado*.

3. Gold, 8815; silver, 1185=10,000. Gold from Baja, near Pampeluna (South America); in porous grains, containing particles of quartz and oxide of iron.

4. Gold, 8794; silver, 1206=10,000. Gold of Rio-Sucio, near Mariquita; found in irregular grains, of a deep yellow. Its specific gravity is 14.699. These four varieties appear to constitute a class, composed of eight atoms of gold and one atom of silver.

5. Gold, 8450; silver, 1550=10,000. Native gold of Ojas Anchas (province of Antioquia, South America). This is found in grains of a reddish yellow colour; it contains six atoms of gold to one atom of silver.

6. Gold, 8240; silver, 1760=10,000. Native gold from Trinidad, near Santa Rosa de Osos, and is of a deep colour; it contains five atoms of gold to one atom of silver.

7. Gold, 7368; silver, 263=10,000. Native gold of Guano, near Marmato. This sample was of a deep brass yellow.

8. Gold, 7340; silver, 2660=10,000. Gold from Otramina, near Titiribí (South America); found in octohedral crystals, of a pale yellow, imbedded in a gangue of oxide of iron.

9. Gold, 7347; silver, 2655=10,000. Gold from Marmato (province of Popayán, South America); is found in cubic and octohedral crystals, of a pale yellow, in a vein of pyrites, running through syenite; its specific gravity is 12.666. The varieties 7, 8, 9, and 10, belong to a class containing three atoms of gold and one atom of silver.

11. Gold, 6452; silver, 3548=10,000. Native gold from Transylvania; found in cubic grains, of a very pale yellow.

12. Gold, 6493; silver, 3507=10,000. Gold of Santa Rosa de Osos, having a pale greenish yellow tint; specific gravity, 14.149.

The following are analyses of native gold from Siberia and Transylvania; for them we are indebted to M. G. Rose:—

No. 1. Gold, '950; silver, '048; copper, iron, and gangue, '002=1.000. Gold from Schaltash; fused at the Mint of Catherineburg.

2. Gold, '944; silver, '052; copper, iron, and gangue, '004=1.000. Gold from the sand of Boruscha; its specific

## Mining Correspondence.

## ENGLISH MINES.

**BARRISTOWN.**—Captain Thomas Angove (April 7) reports—We have drawn the water out of Nangie's shaft as low as the back of the old workings, but are not yet able to clear the atle. The adit end east is producing about 1 ton of lead per fm.; the back of the adit level, working on tribute, is much the same as last reported; also the pitches in the old mine. The eastern flat-roof shaft has been sunk between 3 and 4 fms.; we intend driving after sinking 3 fms. further.

**BEDFORD UNITED.**—Capt. Thos. Ellery (April 12) reports—At Wheal Marquis, the lode is in the 90 fm. level, east of the sump-winze, is 3 ft. wide, and worth 25l. per fm.; the lode in Hodges's rise, in this level, is 2 ft. wide, producing good saving work; and in the stopes, in the back of this level, the lode is worth 50l. per fm.; there has been no lode taken down in this level west since my last. The lode in the 80 fm. level east is 2 ft. wide, producing good stones of ore. In the 70 fm. level east the lode is composed of spar, mundic, and ore. There has been no lode taken down in the 47 fm. level east. At Wheal Tavistock, the lode in the 47 fm. level, west of Phillip's shaft, is 2 ft. wide, composed of spar, mundic, and ore—a kindly lode. The lode in the 28 fm. level, east of the south engine-shaft, and in the adit level east, on this lode, remains without alteration.

**CALLINGTON.**—Capt. J. T. Phillips (April 10) reports—The lodes in the 50 fm. level east is 4 ft. wide, with good stones of copper ore, and promising improvement. In the 70, the lode is 3 ft. wide, with stones of copper ore—there appears to be a branch gone off to the south, which we shall prove in the course of a few days; the lode in the stopes is 7 ft. wide, and will produce 10 tons of copper ore per fm. In the 100 fm. level south the lode is 6 in. wide, work of moderate quality. In the 90 fm. level south the ground is favourable for driving, and the back will work at a moderate tribute; in the north end, a branch of the cross-course is come in with the lode, which is poor—the air is so deficient here, that we are obliged to suspend operations. In the 125 fm. level north, at the south mine, the lode is small, producing silver-lead ore. In the 112 fm. level north we are opening tribute ground; in the south end the lode has a very promising appearance, not taken down. In the 100 fm. level north we are through the evans, the lode has not been taken down. We have divided a parcel of copper ores, computed 100 tons—expect to weigh and sample tomorrow.—Since writing the above, Capt. Barrett informs me the side branch in the 70, cut into on Saturday and to-day, is a fine branch of copper ore, 2 ft. wide; this cut is made on the south side of the level, some 6 or 8 fms. back from the end.

**COATLITH HILLS.**—The mine agent (April 8) reports—During this week the men have been again employed in the winze from the level north of the horse level, and have just cut into the vein; and, from what we have seen, it has a promising appearance, but poor, which I expect will be the case until we sink deeper into it, and have both walls of hazel; the vein throws up the south wall in 4 ft. fms.

**COMBLAWN.**—Capt. Hosking (April 3) reports—Saturday being our regular setting day, I have set the men to drive and cut the lode, at 7l. 13s. per fm. They are to work regularly from Monday morning (six o'clock) to Saturday night (six o'clock)—relieve in place. There are about 2 fms. 4 ft. in, more to drive, and I sincerely hope that the surface water will hold out for us to see the lode.—April 10.—The driving north, in the 20 fm. level, is progressing favourably since last report (March 27); we have driven 8 ft. 9 in.—consequently, we have 9 ft. 3 in. more to drive to intersect the main lode. The surface water is holding out much better than I expected, and the water in the shaft, &c., has fallen off considerably, so that we expect to cut the lode sooner than we anticipated. We have been rising the collar of shaft No. 2 on the main lode, putting in footway, fixing tackle, &c., preparatory to sinking.

**CWM ERFIN.**—Captain Samuel Nicholls (April 8) reports—I have to-day set six men to sink the shaft at 7l. per fm. for the month—this is up to the 13th May—also, the eastern level, driven by four men, for the month, at 4l. per fm. The stopes, west of the whim-shaft, by two men, at 2l. per fm.; this stopes is the same as last reported. The stope, east of whim-shaft, by four men, at 2l. 5s. per fm.; I think it proper to put two men more in this stope, as we are looking very well at present—full 1 ton to the fathom. The stope, east of the eastern shaft, by two men, at 2l. 5s. per fm. I think we shall raise this month 10 tons of ore, if the ore continues as it is at present. We have about 8 tons for the last month.

**DEAN PRIOR AND BUCKFASTLEIGH.**—Capt. H. Choake (April 13) reports—We have cut through the lode in the 20 fm. level near the present end, being nearly 7 ft. wide, but at present unproductive; there is no particular alteration as to the appearances of the lode in the pitches; the tributaries are working with spirit. I have much pleasure to state, also, that we have cut the lode in the 80 fm. level, which is of a very encouraging character, much better than I expected to find it at that point opposite the shaft, as the lode was disordered in the level above; we have cut into the lode about 3 ft., but have not as yet discovered the south wall—the lode is ore throughout, saving work; from the present appearances of the lode in this level, and the improvement that has taken place, I do not hesitate to say, and that it is my real opinion, that we shall have a lasting and a profitable mine. We are getting on with dressing the ores, and shall be prepared to sample a parcel by 19th or 20th.

**DEVON AND COURTEEN CONSOLS.**—Capt. H. Seccombe (April 11) reports—in the end driving west, on the gossan lode, we have driven about 10 ft. on the course of the lode, and have now intersected another cross-course (on a western part of the same we last cut); on this we are again driving to intersect the gossan lode to the west of it; the ground is favourable, and stones and small branches of ore are frequently seen by the workmen in the course of their operations. In the end driving east, on the gossan lode, continues to be divided into small branches, containing spar, mundic, and ore. In the end driving east, on the south lode, the lode is at present small, yet continues to produce some tolerably good stones of ore. In the engine-shaft, the sumpmen have also discovered the cross-course that we have in the 30 fm. level; this will, in the course of the shaft passing through it, yield some advantages for the men for sinking.

**DRAKE WALLS.**—Capt. R. Williams (April 8) reports—Brenton's engine-shaft just as last reported; stopes east of Brenton's, below the 40, good branches of tin; stopes west of machine-shaft, below the 40, good branches; stopes east of machine-shaft, below the 40, saving work. Machine-shaft, sinking below the 50, very good branches of tin; end of machine-shaft, below the 33, poor at present, being disordered by a cross-course; stopes, behind this end, good work; end east of footway shaft, below the adit, branches small, and not rich. New engine-shaft has improved for tin in sinking. The men on the north, or copper lode, are driving by the side of the lode, the ground being too expensive to drive in the lode.

**EAST CROWNDALE.**—Capt. Stephen Paull (April 8) reports—The plat is cut, and engine-shaft cased and divided to the 58 fm. level, and every preparation made to drive to cut the main, or Crowndale lode, and also the north lode in that level. The 47 fm. level, driving on the course of the north lode, is looking better than it has for several fathoms; there is not much doubt, from the appearance of the lode in this place, but that we shall have a branch of ore shortly; the rise and stope in the back of this level are looking very well; the lode is, on an average, 20 in. wide, worth 10l. per fm., composed of spar, mundic, spar, and copper ore. In the winze sinking below the 47 fm. level east, the lode is improving both in size and appearance, and is now 20 in. wide, with a solid leader of copper 9 in. wide, and every indication that it will increase; this looks well for the 58 fm. level. We have again commenced sinking the engine-shaft. At Rix Hill, the lode is 2 ft. wide, composed of spar, capel, spar, evan, and spots of tin. The engine-house at Rix Hill, is completed and roofed. Our engine and pit work are in good order.

**GADAIR MINES (ANGLESEY).**—Capt. H. F. Stephens (April 14) reports—Having, at your request, visited the mining sett held by you, on the Gadaur Mountain, in the Isle of Anglesey, accompanied by Mr. English, and several members of your board, and others interested, I now hand you my report thereon—in doing which, I must necessarily be brief in my observations as regards the extent of the tract, and its geological features—the time occupied being limited, and my attention being more immediately directed to the several workings and lodes opened upon, or seen at surface. The sett, as pointed out to me, appears to be very extensive—being, I should suppose, fully 1½ miles in extent east and west, and ½ mile in a north and south direction. Its situation, as shown on the map, is one of the northernmost points of the island of Anglesey—the Skerries Lighthouses being immediately north, and it is at this part of the sett that several of the lodes show to surface, and in the cliff. The first lode to which my attention was directed is known as the Hound's Cave lode; this has been driven out by adit level, for a distance of 300 fms., at a depth from surface, in the present end, of 9½ fms., and two shafts sunk; it has also been opened upon at surface since 5 or 6 ft. in depth, about 40 fms. east of the present end, where the lode is hardly, and showing spots of ore. The shafts have been sunk; at the fall of the adit, to a depth of about 9 fms., which, however, is not, at this moment, being prosecuted, from the want of power to raise the coming water. In the course of the several workings, ore of a rich quality—judging from that obtained from the sides, and the stones broken in the course of the present workings—has been obtained; but it cannot be expected, that any returns, of a considerable nature, can be made, until the mine is opened to a greater extent, and the engine-shaft put down to a depth of some 40 or 50 fms., and cross-cuts put out to take the lode, as I shall hereafter endeavour to describe. The nature of the country is east of driving, and, with energy, much may be done in a comparatively little time; about 60 fms. south-west of the first lode, another, designated the west point lode, which inclines towards the former, and will intersect it at 240 to 250 fms.—this is a promising lode; and, judging from another, there is every reason to believe that, at the junction of these lodes, they will make a bundle of ore in depth; while the two will, in all probability, fall together and make a master or champion lode; at the same time, it may be observed, that this reasoning is founded not only on the ordinary course of things, but from the encouraging appearance of the lodes and strata of the country. Again, in this direction, at a further distance of about 60 fms., running nearly parallel with the lode first named, is one which shows itself in the cliff, known as the Fox lode; this seems to be a masterly lode, and is intersected, or crossed, by two or three other lodes in its course—one of which, carrying mundic, is nearly north and south;

while another, nearer east and west, will form a junction in driving 40 to 50 fms., on which an adit level has been already commenced with that object. There are other lodes more inland, which have been backed upon; but nothing further done than proving their existence. In addition to the mineral lodes which I have thus briefly noticed, there are other valuable adjuncts connected with the sett, which must not be passed by unobserved upon; at the same time, I may state, my attention was more immediately directed to the mineral resources it possessed, these are the fire-clay and marble—which hold out good promise; the former is found in a cross-course, running nearly north and south, about midway of the property, on the eastern side, and is there found 9 to 10 ft. wide—it's immediate confluence to the point of shipment tending to enhance the value of this material, which will afford a remunerative return, assuming it to be of that superior quality as represented. The marble may be raised in blocks of considerable size, and, judging from the specimens I have seen, I should consider it will, when fairly introduced in the market, form an important feature of the company's concerns, and sunk with the mineral deposits. Having thus observed, however, briefly on the main features presented by the undertaking, I will at once proceed to report to you on the measures I would recommend for effectually working the mine, and also give you my opinion as to the results which I consider may be calculated upon with the application of ordinary skill and energy, assuming that an ample capital is provided—for it is hardly necessary to say, that time is money; and that the sooner the object is accomplished, the greater is the amount saved, more especially in mining operations, which are necessarily confined to nature. In the first instance, I should recommend that an engine—say, 36-in. cylinder—should be at once acquired, and placed at a point, so as to command the two first-named lodes, with the view of intersecting the Hound's Cave lode at a depth of from 40 to 50 fms. This engine would, I have no doubt, be equal to go down to 70 fms., judging by the present water, at which, I may observe, I consider only as a trial engine; as in the course of exploration, and proving the lodes, there can be no doubt that a second or third may be required of far greater power; yet I should not, at the moment, recommend one beyond that named; it would be necessary to put down an engine-shaft—say, to the depth of 45 fms.—to take the Hound's Cave lode, and drive cross-cuts at certain points to intersect that and the west point lode, as also to continue the adit level on the former. I should further recommend, that operations be carried on at the Fox lode, and those immediately contiguous, and that the lodes be further proved, or traced, by coaming, or otherwise. The several buildings—as engine-house, smelting, &c.—require to be erected forthwith; and to effect all of which, I consider the sum of 3500l. will be necessary—at the same time, that I do not make any allowance for returns of ore which may be made, assuming that the amount shall be expended without any results, which, however, I do not contemplate will be the case; yet it is, I consider, best, at all times, to be on the safe side. I shall be happy to attend the committee, to enter into detail, or to furnish them in writing, when called upon, but presume that the information conveyed herein is such as will be deemed sufficient. In closing this report, I have only to state, that having had an opportunity of consulting with Capt. Dyer, Capt. Tucker, Mr. English, and others, having a perfect knowledge of the district, and more especially this sett, I have no hesitation in expressing my opinion, that with economy and perseverance—it being, at all times, borne in mind, that ample capital be supplied, and confidence reposed in your agent—the outlay on the mine may be considered as an investment, from which you may, with confidence, calculate on handsome returns.

**GREAT MICHELL CONSOLS.**—Capt. T. Richards (April 12) reports—That the lode in the sump winze is at present producing but little saving work; the north part of the lode now being carried about 5 ft. wide, containing mundic, ore, fluor, and spar, altogether exceedingly promising; the ground is easier of progress, and should it continue as it now is, we shall be down to the 45 in about three weeks from this time. In the 35 fathom level, west of the sump-winze, the lode has a very promising appearance, consisting of mundic, spar, and ore, producing some saving work, and opening tribute ground.

**HEIGNSTON DOWN CONSOLS.**—Capt. Thos. Ellery (April 12) reports—The lode in Bailey's engine-shaft is 4 ft. wide, producing good stones of tin—a strong, kindly lode. The ground in Badde's adit level north is without alteration.

**HOLMBUSH.**—Captain William Lean (April 11) reports—We are making every preparation necessary to commence sinking the diagonal shaft below the 182 fm. level. The lode in the 120 fm. level south is 3½ ft. wide, composed of spar and stones of lead—saving work; the rise in the back of this level is communicated to the 110; we shall, therefore, resume driving the 120 fm. level north. The lode in the 110 fm. level south is 4 ft. wide, composed of quartz and lead, worth 6l. per fm.; the lode in the stopes, in the back of this level, is 5 ft. wide, composed of quartz and lead, worth 5l. per fm. The lode in the 100 fm. level south is 2 ft. wide, composed of spar and stones of rich silver-lead ore—saving work; the lode in the winze, sinking below this level, is 2½ feet wide, composed of spar and lead, worth 15l. per fm. The flap-jack lode, in the 100 fm. level east, is 2½ ft. wide, composed of mundic, spar, and spots of copper ore, with a regular underlie north, of 18 in. in fathom. The lode in the 90 fm. level south is 2 ft. wide, composed of soft spar, prian, and lead—saving work. The lead pitches, on the whole, are producing a fair quantity of mineral.

**KIRKCUDBRIGHTSHIRE.**—Capt. John Buzzo (April 8) reports—In the 50 fm. level, west end, we are cross-cutting north, to intersect the lode in the winze; as stated before, the ground is rather hard for spending, and as yet unproductive. The lode in the 40 end west is 3½ to 4 ft. wide, producing stones of ore—rather a stiff end; there is a pitch in the back of this level, a few fathoms behind this end, which we expect to hole to a winze sinking under the 30 fm. level; the lode in the end east, on the caunter in the 40 fm. level, is about 3 ft. wide, producing about 5 cwt. of lead per fm. The lode in the 30 end west is 4 ft. wide, producing ½ of a ton per fm.; in the end east, in this level, the lode is not yet properly defined; it produces stones of lead, and we expect soon to see an improvement. The lode in the bottom of Keith's shaft (now 6 fms. under the 30 fm. level) is 3½ to 4 ft. wide, producing upwards of a ton of lead per fm.

**LEWIS.**—Capt. Samuel Noell (April 1) reports—The ground in the 70 fm. level south is harder than usual; but is a very promising strata for tin. The 60 east is suspended, until we have holed the winze to this level, which is sinking below the 50 for a better ventilation. The lode in the 60 east, on south branch, which is 6 in. wide, is producing some good work for tin; but not so rich as last reported; the lode in the 60 west, on south branch, is 18 in. wide, worth 25l. per fm.; the lode in the 50 east, on south branch, is 8 in. wide, producing good quality tinstuff, and very promising. The lode in the 40 east is 6 in. wide, worth 4l. per fm. The lode in the 20 east is 2½ ft. wide, and opening good tribute ground. We sold, yesterday, 17 tons 3 cwt. 1 qr. 18 lbs. of tin, worth 764l. 15s. 6d.

Captain Samuel Noell (April 8) reports—The lode in the 70 west is 1 ft. wide, producing some tin, and very kindly. The ground in the 70 south is hard; but we expect to cut the south branch at or about the end of this month. The lode in the 60 east, on south branch, is much the same as when last reported. The lode in the 60 west, on south branch, is 18 in. wide, worth 30l. per fm. The lode in the 50 east, on south branch, is 8 in. wide, worth 8l. per fm. The 40 east, on south branch, is suspended, in order to sink a winze from this level to the 50, for a better ventilation. The lode in the 20 east is 2 ft. wide, yielding fair quality tinstuff.

**MENDIP HILLS.**—Capt. F. C. Harpur (April 10) reports—I have placed some men to remove the top rubbish, from off the beds of clay, to the east of our present workings, where we find it to be about 9 ft. thick; the clay-stuff which we are now removing to the washing floor is rather coarse work, being intermixed with a large portion of mud, although the quality of the clay is good, as we extracted from the furnace, on Thursday last, 16 cwt. 2 qrs. of lead, being the greatest quantity hitherto produced in one day. The lode in the 38 fm. level, south of shaft, is at present very small, composed of iron and spar, ground hard for driving.

**SOUTH MOLTON CONSOLS.**—Capt. George Chown reports—We have at last succeeded in getting our mine in fork, which we have accomplished with a horse engine, and find her as follows:—The shaft, an underlay one, is sunk to the depth of 18 fms. below the adit, or 23 fms. from surface, through a shoot of ore taking a northerly dip; the lode in the stopes, on the north side of the shaft, is about 2 ft. wide, composed of quartz, white iron, and blonde, with patches of copper and mundic, and carries a solid leader of silver-lead, varying in width from 6 to 9 in., worth about 15l. per fm.; the lode on the south side of the shaft is 2 ft. wide, carrying a rich leader of ore, from 8 to 10 in. thick, and worth 18l. per fm. In the 12 fm. level (the bottom of the mine) the lode is 3 ft. wide, composed of white iron, quartz, blonde, copper, and mundic, and carries a solid leader of silver-lead, from 8 in. to a foot thick, worth about 25l. per fm.; in this level there is a fine pile of work, broken by the former company, containing many tons of ore, but which must remain in its present position, until our engine goes to work—the water being so quick as to prevent our taking it away. Our manager (Mr. P. Clymo, of Liskeard) inspected the mine on Tuesday last, and ordered an engine-shaft to be commenced and sunk with all possible dispatch; we hope to have the engine at work in the course of two months; our lode (a north and south one) is located in a beautiful kiln; and, as regards composition, is precisely similar to the celebrated Combe lodes, from which such immense returns have been made from time to time. In conclusion, I beg to say, that there is not the least doubt of our having a splendid mine.

**SOUTH WHEAL TRELAWNY.**—Captain William Jenkins (April 10) reports—Snell's engine-shaft is in course of sinking with nine men; ground more favourable than when last mentioned; down 29 fms. under adit, with spots of copper ore and mundic; water just the same as last mentioned.

**TAMAR SILVER-LEAD.**—Capt. J. Sprague (April 10) reports—In the 175 end, the lode is 18 in. wide, composed of capel and ore—good saving work. In the 160 end, the lode is 6 in. wide, producing a small quantity of ore. In the 145 end, the lode is 2½ ft. wide, 18 in. of which is yielding work of a good quality. In the 135 end, the lode is 3 ft. wide, composed of can and ore—work of a promising appearance. At the north mine, in the 70 fm. level, the lode is 3½ ft. wide, 6 in. of which is rich work. In the 50 fm. level, the lode is 18 in. wide, interspersed with ore—good stamp work. We sampled, on the 1st inst., 84 tons 8 cwt. of silver-lead ore, which sold for 13384 2s. 10d.

**TIN VALE.**—Sub-Capt. Henry Hooper (April 11) reports—I am happy to inform you we have tin ready for the smelting-house. This belongs to the first part of tributaries, and are making all haste to get round the rest; that it may be carried together. The stamps are working first-rate. There is no material alteration in the south cross-cut; the ground is hard, with streams of water issuing from the same. The middle lode is very kindly, but not rich. The north lode, or channel of branches, is producing good tin, and seem to make its course very regular to the hills; there are four branches, composed

of spar, capel, and tin, intersected with white-beautiful granite. The branches are 4, 5, and 6 in. apart, making a gunnies, from 20 in. to 2 ft. wide. Capt. Phillips called here last week, and was exceedingly well pleased with the mine. He spoke in high terms of the quality of the tin. He did not go underground, but, from the various tinstuffs on the surface, expressed a good opinion of the mine, and said he had known branches of the same description which had made very permanent mines, now at work. I leave other particulars for my worthy captain on his return.

**TRELEIGH CONSOLS.**—Capt. W. Symons (April 8) reports—In the 120 cross-cut, north of Christoe's, we cut the lode west of the slide. In the 100, east of Christoe's, the lode is about 10 in. wide, with but little mineral, but is rather improved in appearance; Garden's shaft, below this level, is sinking in the country; in the same level, west of ditto, the lode is 3 ft. wide, with stones of ore only; in the same level, east of ditto, the lode is 3 ft. wide, looking more promising, with stones of ore, but not to value. In the 90, west of ditto, the lode is 20 in. wide, worth 4l. per fm. In the rise above the 80,

## ASTURIAN MINING COMPANY.

A special meeting of shareholders in this company was held at the offices, Austinfriars, on Tuesday last, the 11th inst.

JOHN KNILL, Esq., in the chair.

Mr. MCKENZIE (the secretary) read the advertisement convening the meeting, which was for the purpose of enabling the registered proprietors of shares to make application to the Spanish Government for the Royal authorisation required to be obtained, pursuant to the provisions of a law recently enacted in the kingdom of Spain, affecting mercantile share companies; he also read a circular letter to the same effect, addressed to the unregistered shareholders.

The CHAIRMAN explained, that this was a special meeting, called in consequence of a new law passed in Spain, relative to mercantile joint-stock companies; he called on Mr. De Pinna, the notary for Spanish affairs in this kingdom, who had been instructed to prepare the requisite Spanish and English notarial acts, and amongst them the authority required to be signed by the proprietors, to explain the law on the subject.

Mr. DE PINNA then explained that this law passed the Legislature on the 28th January last; its character was twofold, as affecting companies about being established, and those already established. It enacted that those companies at present in existence, without Royal authority, should petition for the same, showing their notarial acts and regulations, and other official documents. That, within a certain period after the passing of the act, a general meeting should be called by the directors to take the sense of the proprietors as to whether such Royal authorisation should be petitioned for—and in case of such course being neglected, the company would be considered dissolved, and their affairs should be wound up.

In answer to a question from a proprietor, as to the necessity of such a law, and was there any advantage to be derived from such Royal authorisation, Mr. De Pinna said he believed there was great irregularity in the administration of the affairs of joint-stock companies in Spain, and the intentions of the Government were by this law to assimilate them—it was similar to a Royal Charter in England.

The CHAIRMAN said, they had expected such questions, and had, therefore, taken the opinion of Mr. Amory, their solicitor, who was himself a shareholder, and would, doubtless, explain that opinion to the meeting.—Mr. AMORY said that he held 60 unregistered shares, and he felt no hesitation in signing—it could not involve the shareholders in any difficulties in this country, and if they did not sign they must wind up.—Mr. DE PINNA said, even under the worst circumstances, there could be no responsibility, as by the Spanish law it must come against person or property; and he apprehended few of them had any property in Spain, and while here their persons were safe.

After some further conversation, the individuals present proceeded to sign the necessary documents; and the following resolution was passed, "That an application be made to the Spanish Government, in accordance with the law affecting mercantile joint-stock companies, for obtaining the Royal authorisation to the Asturian Mining Company, in the terms now submitted to the meeting."—The meeting was numerously attended.

## ANTIMONY AND SILVER-LEAD MINES.

At a meeting of this company, held at their offices, 58, Lombard-street—Capt. F. J. BELLIW, H.E.L.C.S., in the chair—the minutes of the last meeting were read and confirmed.—The secretary produced the report of D. T. Ansted, Esq., Professor of Geology at the King's College, who had been sent expressly to report on the minerals in the sett. On handing the report to the chairman, the SECRETARY stated, he had had two personal interviews with the learned professor, at which he had stated—"that he entertained the greatest confidence in the success of this undertaking. That the mine at the present moment (although only in her infancy) would pay all her expenses, and leave a profit. That there could be no question that, by a moderate outlay, large and lasting returns of antimony and silver-lead ores might be expected from this sett." There had been already numerous applications from the country, and more particularly Cornwall, for shares; and, in the course of a few weeks, it might reasonably be anticipated the present list would be completed, and the whole capital of the company subscribed. It was true that, at the present time, there was a great depression in the money market; but he trusted, as the banner advanced, affairs would take a more favourable turn, and mining resume its usual briskness. It must be recollect that mining was not only becoming fashionable but profitable—so much so, that even Prince Albert had embarked part of his capital in mining undertakings in Cornwall, under the able superintendence of Mr. John Taylor. As regards profits, it was well known that where capital embarked in mining undertakings, had been judiciously laid out, the return had been, at least, tenfold; and, when they took up the *Mining Journal*, and compared the home mines with the foreign ones, it would be found that the difference in favour of the home mines was upwards of 100 per cent. It was not unusual for Cornish mines to pay regular dividends of from 25 to 40 per cent., and, in some cases, even more. After looking at the encouraging report received from Prof. Ansted, the shareholders of this undertaking had every reason to expect a successful issue; and that the day would not be far distant, when the Antimony and Silver-Lead Mines of St. Kew would stand prominent among the dividend-paying mines of the county.

The CHAIRMAN having read the report of Prof. Ansted, moved that it be printed, and circulated among the shareholders, which was carried unanimously. It was further resolved, that the purse be instructed to put on the mine an additional number of miners, to prosecute the works with vigour.

*Report of Professor D. T. ANSTED, M.A., F.R.S., Professor of Geology at King's College, London; and Consulting Mining Engineer.*

In conformity with your request, expressed in your letter of the 25th March, I have to state that I have visited the mines and mining property there referred to, consisting of an antimony mine lately opened, and some costeblings for lead, both in the neighbourhood of Trengar, and Trebunget, in the parish of St. Kew, Cornwall. I have now the honour to report to you the result of this visit. The mining ground, or "country" in this sett, consists chiefly of two kinds of killas, or silty rock—one kind blue, hard, and partly crystalline, the other pale yellow colour and softer texture, and quite unfit for use as slate. Besides these rocks, there are also several olden courses of whitish porphyritic rock, running east and west; the general dip or inclination of the silty rock to the horizon is towards the west and south, and the direction of the principal lodes or mineral veins is north and south, with a prevailing underlay to the west. The surface is broken and hilly—the direction of the principal valley being to the south, so that the main lode cuts out, and is conveniently laid bare by costebling on the left or eastern slope of the hills, enclosing this small valley. The principal lode is that containing lead ores, probably rich for silver, and the antimony occurs chiefly, if not entirely, in one spot on the opposite side of the valley near the hill top. Before proceeding to describe the mines and mineral products of the sett, it will be worth while to refer for a moment to the district generally. Within the compass of a very few square miles, there is here abundant evidence of mineral riches—the chief metals found being lead, silver, antimony, and zinc. Of these the lead and silver, in the form of argeniferous galena, and the zinc as blende, occur in the same north and south lodes, while the antimony is usually in bunches of pocketes, and is not associated with other metals; the former ones are said to occur chiefly in the blende, and the latter in the whiter varieties of killas. The lead has been extensively and very profitably worked at Trebunget, but has also been found elsewhere in the neighbourhood, and especially in the Wheal Sarah Mine—it appears to be remarkably rich for silver. The lodes are strong, very uniform, and continuous in direction, and offer no practical difficulties in working. The district in the neighbourhood of Trengar is one of the best known in Cornwall for the grey ore, or sulphure of antimony. This ore has been worked at intervals for nearly a century, near St. Minver and Endelony, and at other places, usually in rich and productive bunches or pocketes. The Antimony Mine, at Trengar, in the sett visited by me, is opened in a whitish, or pale yellow killas, on the upper part of the hill, on the west or right bank of the little valley already alluded to, and near the head of the valley. The present workings consist of a kind of open working or pit, whose depth is about 3 fms., and which branches out into one or two small shafts at the bottom. The sinking has been very irregular, in consequence of the ore being widely and abundantly distributed in several leaders or branches, each of which is of tolerably large size, and which all seem to have a tendency to converge downwards, towards the main lode, but whose true direction hitherto is by no means clear or determinate. The lode, or more probably the bunches of ore, towards which these conduct, appear to be at no great distance. There is every indication of its being of large dimensions; the quality of the ore already raised is excellent, and the quantity large (its value greatly exceeding the expense of raising); the country is soft, and easily and cheaply mined, and an adit might be driven to drain the mine to a moderate depth at very small expense. Until the lode or bunch is found, the ore raised from the leaders will more than pay the expenses of the working. Little more seems required than a small outlay of capital to start the mine, and (if required) to drain the upper workings by a short adit; the returns will probably be almost immediate, and there is every prospect of their being considerable. The indications of silver-lead ore (argeniferous galena) in this sett are not less certain or satisfactory than those of antimony, but less has been done at present to show their value. There are here indications of two lead lodes, one of them the continuation northwards of that worked in the Wheal Sarah, and the other ranging a little to the east, and bearing apparently in a somewhat westerly direction, so as to fall in with the other (of which it is perhaps a branch) about half a mile to the north, and not far from Mid Hendra. The Wheal Sarah lode has been proved by costebling in several spots south of the sett I examined, and is throughout very promising, although there somewhat disturbed by evans. The specimens brought to grass, both from the costeblings and the deeper workings, at a spot where an engine is now being erected, and where it is proposed to work the mine vigorously, show a very excellent galena; and these also which were shown me as obtained from costeblings in the north are similar in character, but perhaps still more promising. The lode thus well marked in the Wheal Sarah sett, and shown in its continuation northwards at two or three points, was laid bare during my visit at Lower Trengar, and continued beyond question still further. The other lode seems to have been discovered, and partly worked to, by the old men—an adit having been commenced near the Wheal Sarah boundary, but in the sett belonging to it. It is probable, that by continuing this a little further to the east, the second or east lode would be reached. I have already stated my opinion, that it will prove to be a branch of the main lode, running in a little south of Mid Hendra; should my view be correct, the lode may be expected to be the richest for ore in this part, and I think there are other reasons why such should be the case; for, in the first place, the country is here comparatively free from evans; and, in the next place, the portion of the lode corresponds in position with the richest and most valuable portion of the Trebunget lode, which has proved so profitable. It is not unimportant to remember also that, in consequence of the position of the sett in the upper part of the valley, and the extent of workings already undertaken in the Wheal Sarah, this latter mine will both prove the lode, and drain the northern portion of it. In order to establish important lead mines in this property, it will be necessary to costeble with care, and to some extent, at moderately distant spots; and it will also be advisable to prove the two lodes at some little depth, to determine their real underlay, both in direction and amount. It will then be useful to select the spot which is best adapted for extensive workings, and sink there steadily to cut the lode, at a moderate depth. A certain amount both of time and money are, of course, required to complete such operations; but I think there is very good reason for expecting a highly favourable result, since

there seems every reasonable ground for expecting a rich and valuable lode at moderate depths. I consider, indeed, that both with regard to the antimony and silver-lead, the sett is very admirably placed, and that with a moderate capital, and some little patience, it would prove a very profitable adventure to continue mining operations, and carry them on with greatly increased vigour.—*Glovers' or road. Hyde-park.*

## THE GOVERNOR AND COMPANY OF COPPER MINERS IN ENGLAND.

INCORPORATED BY ROYAL CHARTER.

A numerous meeting of proprietors of the above company was held, at Radley's Hotel, Bridge-street, Blackfriars, on Saturday last, for the following purposes:—

The DEPUTY-GOVERNOR (G. H. Pelly, Esq.) took the chair, and called on the secretary to read the advertisement which convened the meeting.

The SECRETARY (Mr. Younger) read the same.

The CHAIRMAN then read the following report:—

In consequence of the distressed state of the company's affairs, many conferences have been held between the court of assistants and all parties interested in the company's welfare, whether as shareholders or debenture holders; so that the court of assistants were thus now to pursue their usual course, which only have to repeat what is unfortunately too well known, probably to every one present. Two committees have been diligently sitting for many weeks past—the one nominated by the general court of proprietors, and the other by the debenture holders—to investigate our affairs. The court of assistants, therefore, feel themselves, in a manner, relieved from the task of further detail. In consequence of the resistance of our colliers, and the workmen in some other departments, to the necessary reduction of wages, consequent on the extreme depression of trade, seven blasts had to be blown out, and the operations of the manufacturing works had to be suspended for several weeks. This has caused a falling off in the quantities manufactured, with the exception of iron. In consequence of one of the proprietors, Mr. W. H. Lord, on the part of himself and other proprietors, having filed a bill in Chancery, it has caused a suspension of the proposed trust deed—(hear)—in consequence of those proceedings, the governor, deputy-governor, and court of assistants, have thought it right to offer themselves for re-election for the ensuing year; but as soon as, by any arrangement, the reorganisation of the company can be perfected, the members will be quite prepared to make way, by resignation, for such parties as may be chosen by the newly-modelled body. The court of assistants will recommend to this meeting the appointment of two committees—consisting of three from the original shareholders, and three from the preferential shareholders—to confer with the debenture holders upon an amalgamation of interests, to serve as a basis upon which fresh capital may be raised.

Mr. LORD asked if the proprietors had investigated the affairs of the company?

The CHAIRMAN replied, yes, and that he had understood a report would be presented to the meeting.—Mr. J. H. GOODHAR, one of the committee of investigation, rose, and placed their report in the hands of the chairman.

Mr. R. W. CARDEN desired to know if the directors had prepared a balance-sheet?

The CHAIRMAN replied, no, as they considered that was the duty of the committee.

Mr. CARDEN said, he had always been accustomed to receive one from the hands of the board of directors.

Mr. SQUANCE, the solicitor of the company, wished to draw the attention of the meeting to its main object—that of electing a governor, deputy-governor, and court of assistants, for it was that was neglected they would forfeit their charter. (Hear.)

Mr. INGLIS, Mr. FLIGHT, and others, complained of the want of a balance-sheet.

The CHAIRMAN now called upon the SECRETARY, who read the report of the committee, which put forth a very unfavourable statement of the future prospects of the company, and passed some severe strictures on the conduct of the directors.

Mr. LORD moved, that it be printed, and circulated among the proprietors.

Mr. GARDEN seconded it.

Mr. CUMMINS (a director) thought it was usual, when a resolution was passed on any body of men, they should be placed in the situation to explain, or repel it, before it was printed and circulated; but, on this occasion, the report had not been heard of, by any one of the board, until the meeting had just heard it read. (Hear.) The members of the board held character to be of some value to men, and ought not to be trifled with; they, therefore, claimed the right of replying to those charges before they were circulated to the world. (Hear.)

Mr. KENDALL, one of the committee, stated, it had not been in their power to present them with a copy, as the report had only been completed that morning. He said, the delay arose from the difficulty they had in obtaining papers from the office of the company.

Mr. SQUANCE said, he was not interested in the company as a shareholder, but as its adviser he addressed the meeting. He said, he understood proceedings were going on, or threatened, that might have for their object to fix every shareholder as debtor to the creditors of the company—(hear)—so that they might become liable in their individual capacity; and, therefore, whatever threats might be held out by the debenture holders, they ought not to regard them as their personal creditors. He said, it was his duty to inform them, if they violated their charter, they might prejudice themselves, and close the protection which was afforded to them by the charter; he thought they had not acted right towards the gentlemen who formed the executive, by condemning them without first hearing them in regard to the charges. It was not the usual spirit of English gentlemen to act thus towards each other. He (Mr. S.) had much intercourse with those gentlemen in the course of this business, and he had always received the greatest courtesy at their hands. He said, he must reply to one paragraph in the report, which stated, they could not have made their paper liable to the Bank of England. He (Mr. S.) would only say, the Bank was ready to afford them every accommodation, and to extend the period for payment of the sum they had borrowed. They have said, they will act with every consideration towards the company, if the proprietors did not harm among themselves; but if they broke up the establishment, they would feel bound to take possession of the property. (Hear.) He had also been informed of this by their solicitor, and he could assure the meeting it was not an idle threat. The solicitor of one of the lessors of the works was in the house, and was ready to inform the meeting, that every indulgence would be extended to them by the gentlemen who formed the executive. They have said, if they quarrelled among themselves, he would take possession of the property. The deed of trust had been prepared for the general benefit of the proprietors; the draft had been sent to the solicitor of the Bank for his approval, and it would soon be ready. They were aware a bill in equity had been filed against the company, with 69 interlocutors; and, if proceeded with, some time must elapse before the answers could be put in, and a corresponding period for a final settlement.

Mr. ENTHORPE (a director) defended himself from the charge made against him in the report, which he said was untrue.

After some conversation on the propriety of printing the report of the committee, in which several gentlemen took a part, it was admitted, justice would not be done to the directors until their reply was given to those charges—the resolution was, therefore, withdrawn.

A request was then made, that they should be allowed to adjourn for half an hour.—Capt. MOONSON (a director) thought the proprietors were wanting in courtesy to request the directors to retire, while they consulted together how they should act to turn the board out. (Hear.)—Mr. CARDEN still urged the adjournment for half an hour.

Mr. SQUANCE said, he was satisfied Mr. Carden was not aware of the injury that the company would sustain if it were insisted on—it would involve the forfeiture of their charter. (Hear.)—It was at last agreed to, that the shareholders should be allowed to retire to the next room for half an hour.

The CHAIRMAN said, they were ready to resign their office of directors as soon as they could do the company resuscitated.—Mr. CUMMINS also assented to this.—Scrutineers having been appointed, the larger body of the shareholders left the room. Having been absent three-quarters of an hour, the CHAIRMAN said, as the time allowed to the proprietors for consultation had passed, he would now resume the business of the day, and proceed with the ballot, which he should allow to remain open until the latest moment, which he fixed at half-past three o'clock.—The ballot then commenced, when the shareholders returned.

Mr. CARDEN expressed his surprise and disapprobation at the conduct of the directors in sending a house list to the absent shareholders, and soliciting the proxies in their favour, by which they had secured their election.

Mr. FLIGHT, with some warmth, condemned it; he called it packing the meeting.—Mr. LOUIS VOUTON replied, it was no uncommon thing for parties, who could not attend the meeting, to send their proxy to one of the court. (Hear.)

Mr. CARDEN presented a proxy from Mr. Wix, in which the names had been erased, to know if it could be used?—Mr. SQUANCE replied, it could not; and took the opportunity of reiterating upon this party for having adopted the very course they had condemned in the directors—that of soliciting proxies. (Hear.)

Mr. LOUIS observed, he had, in conjunction with his friends, filed the bill with the view of benefiting all parties; they wanted to create one common interest—and when that was accomplished by a mutual understanding, the law proceedings might soon be settled. (Hear.) He wished them to share spot and lot together.

Mr. SQUANCE was sure there was not a gentleman in the room who could be opposed to such an arrangement.

Mr. CUMMINS was happy to see a disposition to come to some friendly arrangement. It would be the salvation of their property.

The CHAIRMAN said, he could assure the meeting, directly such an arrangement were come to, the present board would willingly retire.—(The hour for closing the ballot having arrived, the scrutineers retired to take the numbers. Here a long, desultory, and unsatisfactory conversation took place, with an endeavour to bring about a reconciliation between the three conflicting interests—the preference shareholders, the old shareholders, and the debenture holders—but to no effect.) After which, Mr. FLIGHT, with some warmth, censured the conduct of the directors as immodest, to attempt to force themselves into the directory against the wish of the proprietors. He then proposed a vote of censure.—Mr. CARDEN felt deep regret to be compelled to second the resolution. It had been a source of pleasure to him to move a vote of thanks to various boards of directors; but he had never before been pained by the necessity of supporting a vote of censure on any body of gentlemen. He felt great sorrow on the present occasion, as he knew there were several very honourable men at that board; and he regretted they should be found in such company. (Hear.)

Mr. CUMMINS thought the forming of a house list, for the purpose of supporting the interests of the company, did not deserve such a censure.—Mr. CARDEN replied, he did not support it on that account, but for the past mismanagement of their affairs. (Hear.)

Mr. FLIGHT then put the resolution to the meeting, which consisted of about 50 persons, besides the directors. Twelve hands were held up in its favour; the rest taking no part in voting for, or opposing it; it was, therefore, virtually carried.

Mr. FARNHILL thought, after such a vote, they had no alternative in settling their affairs but by going to the Court of Bankruptcy.—Mr. INGLIS moved, that the committee continue its functions, which was seconded and carried.

Mr. GILBERTSON was sorry to see the meeting likely to separate without coming to any particular result. He condemned the acts of the directors, though he did not support the vote of censure upon them. He knew a great number of individuals, servants of the company, who had grown grey-headed in their employ; and if the property was to be abandoned, those men would be thrown out of bread—(hear)—and this evil would be still further increased, by throwing out of employ between 8000 and 10,000 men. He (Mr. Gilbertson), on the part of his brother and himself, represented 8000*£* of capital in the company; and, as great as already would be the sacrifice, they would make every effort to endeavour to sustain these men in employment. (Hear.) He held the property at Cwm Abbey to be most valuable, and worthy of being sustained—not that it would pay a dividend of 5 per cent. upon the exhausted capital, but it offered good remuneration to any new advancement; and, large as was his present loss, he would make a further risk to sustain the company. (Hear.) Let them, then, as Christians, endeavour to continue the works, and sustain those men who have claims upon them—for to throw so large a number out of employment, at the present distressed state of trade, would be attended with the most disastrous consequences. (Hear, hear.) He would, therefore, more, that a committee of shareholders be appointed, to endeavour to carry out this view. He would urge upon the meeting the importance of these considerations, which involved a deeper interest than their pecuniary loss.

The CHAIRMAN replied, it was what the court of assistants were most anxious to accomplish—the resuscitation of the company. (Hear.)

This appeal of Mr. Gilbertson's had a powerful effect upon the meeting, and immediately after Mr. GARDEN, the leader of the opposing party of shareholders, advanced to the chair, and said—I have here, Sir, a list of gentlemen whom we propose to you to form a committee to settle our differences, and, if possible, to devise some means by which we may raise the funds to carry on the works. (Clears.)

could not publicly mention terms, but if Mr. Charles Smith would retire with him for a few minutes, he had no doubt of putting him in possession of such facts confidentially as would satisfy him and his friends of the propriety of the course the directors proposed to pursue.

The Chairman, Mr. Smith, and Mr. Mansell, then retired, and were absent about five minutes. On their return, Mr. Smith said, that he had heard a statement from the chairman, which convinced him they should do right in acceding to the motion, and putting their complaint in the directors. (Cheers.)

Mr. MAYHEW said, that he felt bound, by his instructions, to move, as an amendment to the motion before them, that no amalgamation should take place.

The amendment not being seconded, the original motion was put, and carried unanimously.

The election of Captain Rose, as a director, in the room of Mr. Posford, resigned, was confirmed; Mr. Charles Smith appointed as auditor, and thanks given to the chairman and directors, for the way in which they had managed the affairs of the company.

The CHAIRMAN acknowledged the compliment, and proposed that a vote of thanks be given to the purser (Mr. Mansell). That gentleman devoted himself to their service day and night; and, if attention could have ensured success, they would be sure to have had it.

The motion was carried unanimously, and acknowledged by Mr. MANSELL.

Thanks were then voted to the solicitors (Messrs. Pocock and Marston), and to the captain of the mine (Mr. Hugh Jones), for the way in which they have performed their duties; and Mr. Charles Smith having been requested to assist the directors in carrying out the contemplated amalgamation, thanks were voted to the chairman, and the meeting separated.

#### CONDURBOW MINING COMPANY.

At a meeting of adventurers, held at the mine, on the 11th inst., the accounts were examined and passed, showing—Balance due to end of March, 1052. 9s. 8d.; ores sold, 11972. 17s. 9d.—13037. 7s. 5d.—By labour cost Feb. and March, 8782. 15s.; bills, 2482. 17s. 6d.; 1-20th dues, 591. 17s. 11d.; leaving balance against the adventurers, 1151. 17s. 17s.—It was resolved, that the next meeting of adventurers be held on the second Tuesday in June.—The following report, from Capt. Nicholas Vivian, the purser and manager, was read:—

The sump-shaft is in course of sinking under the 60 fm. level, and may be sunk to a 70 fm. level in about three months; the lode there is 5 ft. wide, promising, and yielding a small quantity of tin. The 60, east of sump-shaft, on a caunter lode, is very productive of tin; it is suspended until a winze, which is in course of sinking below the 50, and rising against above the 60, is hoisted; a fortnight may be required for this purpose, when a pitch in the back of the 60, and two pitches in the bottom of the 50, will be set on tribute. The 60 west is a very promising level, with a good course of tin. In the 50 east is a promising lode, productive of tin. In the 40 east is a promising lode, but poor. In the winze, sinking under the 30, on Llandower lode, the lode is large and promising, yielding 4 tons of copper ore per fm. The 30 east, the 10 east and west, and deep adit end, west on Llandower lode, are all in course of driving, but at present the ends are poor. In the back of the 30, east of Prysce's, on Llandower lode, there is a good course of ore, working at 5s. in 17, tribute. The back and bottom of the 10, on this lode, are also working on tribute at 10s. in 17. The back of the deep adit, on Llandower lode, is working at 9s. in 17. The back and bottom of the 30, on Llandower lode, is working in three pitches, two of them at 10s. in 17, and the third at 1s. in 17. The winze, sinking under deep adit, on Llandower lode, is yielding 2 tons of ore per fm. We have now a greater number of tributaries engaged than we have had at any former period, but the miserably low standard of copper and tin is grievously against us; were those metals at a fair price, we could make some profit. The principal adventurers, in accordance with my own views and those of the underground agents, having suggested an increase of tribute, we have, since the meeting held here on the 8th of February, increased our tribute by driving in the back of the 50, and hoisting to the 40 fm. level, thereby ventilating these levels, and enabling us to work on tribute ground, and by sinking a winze under the 30, on Llandower lode; these, with some indispensable erections at the surface, account for our not liquidating the debt on the book.

#### MARKE VALLEY MINING COMPANY.

The annual general meeting was held at the White Hart Hotel, Salisbury, on Thursday last, W. FAWCETT, Esq., in the chair.

When the following report of the directors was read:—

The directors beg to submit to the proprietors the following report of the underground works since they were called together in December last:—Marke's lode, in the 80 fm. level, has been driven on east 4 fm. 5 ft., the lode on an average being 20 in. wide, and composed principally of fluor spar, muriatic, and a small quantity of copper ore. In February this end was suspended, and a driving north, to cut Sarum lode, was commenced. The ground being very hard, this cross-cut has been extended 3 fm. 5 ft. only; however, a favourable change may be expected very shortly, as there was ground at this point in the 65 fm. level; in the same level, Marke's lode has been driven on west 19 fm. 2 ft. 9 in.; the lode has been tender and easy for driving, and about 18 fm. wide, composed of soft spar, prian, and muriatic, with good stones of rich copper ore—some portion being a saving work; at present, the end is in a firmer granite, and not so easy for driving. There is a cross-course about 10 fm. before the end; and the manager calculates that it will take about three months to reach it, and at which point he anticipates the lode will become productive. Sarum lode, in the 65 fm. level, has been extended east 7 fm. 4 ft. 7 in.—marking, with what was before driven, 18 fm., on a course of ore that has produced 22 tons of ore per fathoms for the entire distance; the lode in the present end is 18 ft. wide, and will yield 15 tons of ore per fm. Fawcett's winze has been sunk 6 fm., 1 ft. 10 in., and is hoisted to the 65 fm. level; that portion of the lode carried has produced 8 tons of ore per fm.; the part of the lode still standing will yield 6 tons per fm.—the whole of the lode, therefore, is worth 14 tons per fm.; this winze (sunk from the 50 to the 65 fm. level) is on the course of the lode, and measuring about 20 fm.; midway levels, east and west, are now being driven; the lode, going east, is worth 10s. per fm.; going west it is worth 12s. per fm.; the stones, in the back of the 50 fm. level, have produced 20 tons of ore per fm.; and the lode is now worth 60s. per fm. The pitches in the back of the 50 fm. level are suspended—not being remunerative at the present low standard. From the foregoing statement, the proprietors will perceive, that the main lode has become very much more productive than at any former period; and the manager reports, that the lode in the bottom of the 65 fm. level is better than at any part of the mine as yet seen; and he, therefore, feels confident that, when the cross-cut in the 60 shall have reached this ore ground, the lode will be found to be even more productive, and the ore to be of a much better quality. The cash account shows a balance of 454. 7s. 9d. in favour of the company—out of which sum will be paid the cost-sheet for March, which may be estimated at 350s.; but the directors have now for sale 341 tons of ore, which, at the present low standard, may realise 650s. The debt of 3582. 2s. 2d., due to the assignees of Messrs. Brodie, was paid off on the 3d of March last. In consequence of Fawcett's winze having been communicated from the 50 to the 65 fm. levels, and midway levels having been commenced therefrom, east and west on the course of the lode—thus enabling the backs to be stoned with much greater facility, and at less cost—the proprietors may reasonably calculate upon the workings for the current year producing increased and profitable returns; and, when the Sarum lode is intersected in the 80 fm. level, the directors anticipate they will be in a position to declare a dividend.

#### ST. JOHN DEL REY MINING COMPANY.

A special general adjourned meeting of shareholders in this company, was held yesterday, at the London Tavern, Bishopsgate-street, for the purpose of electing a director, in the room of Stuart Donaldson, Esq., resigned.

J. D. POWLES, Esq., in the chair.

Mr. ROUTH then read the notice convening the meeting; when

The CHAIRMAN observed, that since the notice had been inserted, they had received two letters, from gentlemen who had proposed themselves as candidates for the office—one from Mr. Illingworth, of Connaught-square, the other from Mr. C. Herring, jun., Cornhill.

Mr. SCHNEIDER, in moving that Mr. Illingworth be elected a director, said that he had known that gentleman for some years, and believed him to be most eminently calculated to fill the office of director to the St. John del Rey Company; he had been for years in South America, was well acquainted with mining, was an auditor of the company, and held 200 shares. He was pleased in opposing their late manager Mr. Herring, as their fathers had been most intimate, and he felt much respect for the family; but he thought Mr. Illingworth much the better qualified of the two. Circumstances have arisen which makes it of the utmost importance for the meeting to be careful in their choice of a director—one who would act with unanimity with the board at home and the officers abroad. Differences existed which would prevent Mr. Herring ever acting with cordiality, and he was sure his election would lead to anything but the well-being of the company. He alluded to the letters which have lately appeared in the *Mining Journal*, on the management in Brazil, and the treatment of the slaves; and although he believed the greatest part of the assertions to be incorrect, it was evident they were written by some one intimately conversant with their affairs; and he thought the writer calling himself "A Shareholder," would have acted with much more candour, had he laid his knowledge and his complaints before the directors. He moved that Mr. Illingworth be elected.—Mr. MOCATTI seconded the motion.

Mr. Boswells proposed Mr. Herring, and said the present prosperity of the mine was entirely due to him; and, from his long residence in Brazil, his extensive practice, and knowledge of the mines, his election as a director would confer the most solid advantages on the company. He disclaimed any hostility or ill-will towards Mr. Illingworth.—Mr. JAGO seconded the motion.

The CHAIRMAN said, some explanation was, of course, expected; and if any in that room expected there was, on the part of the directors, the slightest ill-feeling, or even the absence of the utmost respect towards Mr. Herring, whose abilities and high character they acknowledged, they were much deceived. There were, however, many circumstances which rendered that gentleman unfit to sit as a director at that board. The state of the company's affairs were never so prosperous; and if Mr. Keogh remained several years, another might succeed, and improve upon his measures—their expenses were proportionately less—gold return more—the greatest unanimity existed among the officers and men—the negroes were happier, healthier, and the mortality less—even less than the average of England. Mr. Herring was in direct opposition to Mr. Keogh, and to their principal mining captain, whom, in all his despatches previous to leaving the mine, he had praised as being the most experienced minor in South America. It would lead to the ruin of their property, if the elements of discord were introduced, by the election of a director opposed to all the acts of the board, to the chief captain at the mine, to the heads of the negroes, and that of the reduction department.

Mr. HERRING rose for the purpose of explanation: he said, it was after his last letter that he discovered the practices of the principal captain, to which he had thought it his duty to call the attention of the board. He entered at length into the causes of the differences which existed; and the CHAIRMAN read the despatches of Mr. Keogh on the subject, which are too long for insertion—but which inclined the majority present to think that gentleman had acted in the best manner for the prosperity of the undertaking.—The meeting was afterwards most frequently addressed by Dr. Gordon and Mr. Mallin, in favour of Mr. Illingworth—as, while they bore testimony to the character and talents of Mr. Herring, they were satisfied the election of the former alone could secure the unanimity of the board and the office abroad, which alone could advance the company's prosperity.

On the motion being put from the chair, the show of hands was 53 for Mr. Illingworth, and 13 for Mr. Herring.—Mr. JAGO then demanded a poll; the result of which was, the election of Mr. Illingworth by a majority of 18s. 18s.

The following is an extract from the superintendent's annual report for 1847:—"The year 1847 has been one of more than usual progress at Morro Velho, and will bear an advantageous comparison with the year 1846, or with any preceding year—whether considered with respect to the number and importance of great and expensive works undertaken, and completed during the past year—of other important works actually in progress, and which, when completed, as it is hoped they will be during the present year, are calculated to add considerably to the prosperity of the establishment—or whether viewed with regard to the increased production of gold, and consequent increased profits of the owners—whether, again, viewed with regard to the improvement in the satis-

factory state, and in the material as well as moral comforts, of the negro labouring population."—A great number of most important works have been undertaken and concluded during the year 1847.

During the whole of last dry season, a party was employed in taking levels and surveys of the country and water-courses for miles round about Morro Velho, in order to ascertain from what point the required additional supply could be most advantageously brought home. Now, we only wait the returning dry season to commence this work.

Turning to the results of the operations in the respective years 1846 and 1847, there appears in favour of the latter year an increase

In the ore stamped, of 5299 tons = 15 17-100ths per cent.

In the gold produce, of 17,973 tons = 11 75-100ths "

And a decrease in the cost, of 818,771 £ 45 32-100ths "

It was, however, in the last 6 months of 1847, that the greatest improvement took place; and the comparison of that portion of the respective years 1846 and 1847 shows the following results in favour of the latter year—viz.: an increase

In ore stamped, of 3720 tons = 30 4-0ths per cent.

In gold produce, of 15,506 tons = 45 57-100ths "

In the profit, of £5372 = 76 "

The various measures taken, in the course of the year just past, to preserve the health of the negroes, to protect them from insult or ill-treatment, and to add to their comfort, by allowing them the opportunity of earning the pecuniary means of comfort through over-time labour, while the effect of such over-time labour was vigilantly watched by the medical officer, lest it should become injurious to their health or strength, have all combined to improve their position, both morally and physically; they feel that they are treated with the consideration due to our fellow men. With the increase of their comforts, and of their means, they feel that they have something to live for besides their daily task. And I may venture to say, it would be difficult anywhere to find a better regulated, a more orderly, a more contented, or a happier set of beings, than the large body of (between 800 and 900) blacks now in the company's service.

The following comparative statement of the mortality among the blacks, for the last seven years, shows a result for the year 1847 highly creditable to the care and skill of the medical officer:—

Commencement of	Total No. of Blacks	Deaths.
1841	459	28 = 6 1-10 per cent.
1842	458	20 = 4 37-100ths "
1843	459	25 = 5 "
1844	502	30 = 5 97-100ths "
1845	506	27 = 4 78-100ths "
1846	702	41 = 5 84-100ths "
1847	847	22 = 2 6-10 "

Mr. Birt, in his annual medical report, very fairly observes:—"This is a very favourable document, not only as regards the comparison with those of former years, but also bears a comparison with any European statistics of mortality. In England the per centage, including the whole population, is not less than 3 per cent.; or little more than 24 per cent." Heretofore the rainy season has been generally marked by heavy and extensive breakages of the regos, which supply the water required for working the machinery, and the repairing of such breakages necessarily involved a serious expenditure both of money and time.

During the present season, these breakages have not occurred, owing to the prudent precautionary measures adopted, in appointing a detached corps of 8 or 16 men during several months of the preceding dry season—say, from the end of June to the end of October—whose sole occupation it was to repair and strengthen the regos wherever they evinced any symptoms of weakness.

In conclusion, allow me to observe, that with the mines in excellent working condition, an increasing extent of stoping ground, the pitwork of the three mines, as well as the pumping & machinery, all new, powerful, and in perfect order, with measures now in progress for largely increasing our manful force, as well as our stamping-power, and with order and economy reigning in every department, I hope it is not to much to anticipate that the present year will be one of, at least, not less prosperity than that which has just expired."

#### TAVY CONSOLS MINING COMPANY.

A meeting of adventurers was held at the Central Hall, Plymouth, on Tuesday last, when the committee presented a report, in which they stated, that Capt. Lean, of Holmshurst, whom they had employed to examine the mine, had a very high opinion of the undertaking; and from his expressed opinion to some members of the committee, and having sold since Christmas 1000s. worth of ore in it, they have great confidence that the mine will, in a few months, return a profit to the adventurers, and handsomely repay them for their perseverance and outlay.

The statement of accounts showed a balance from last account of 922. 14s. 9d.; January cost, 214. 8s. 11d.; February ditto, 224. 14s. 8d.; dues to G. Strode, Esq., 562. 4s. 4d.; merchants' bills, 1202. 10s. 9d. = 7082. 13s. 5d.—Balance down, 192. 19s. 8d.; bills for January ore, 402. 18s. 8d.; February ditto, 287. 8s. 9d. = 7082. 13s. 5d.: 62 tons of ore, estimated value 300s., stands to credit of the mine.

The following report from Capt. W. Goss was read to the meeting:—

I beg to inform you, that since our last general meeting, the engine-shaft has been sunk about 3 fm. 2 ft. through good grey ground, producing, on an average, about 6 tons per fm.

The lode in the bottom of the shaft is from 2 to 24 ft. wide, with a leader of solid ore in the western end, about 1 ft. wide; and the shaft all over, in the country as well as in the lode, is beautifully bespangled with ore. The 36 fm. level has been driven west above 5 fm., through a lode from 7 to 8 ft. wide, of a very promising character, although at present poor, composed of muriatic, peach, and prian, with strong spots of yellow and black ore. (Since the last general meeting, the shaft and 36 fm. level have produced from 50 to 55 tons of ore.) The 24 fm. level, west of the cross-course, has been driven about 3 fm.—the lode about 4 ft. wide, composed of muriatic, spar, and peach, with good stones of yellow, ore, and, I think, as we get out from the cross-course, the lode will prove productive; in the 24 fm. level north, on the cross-course, we have driven about 4 fm.; here I fully expected to have cut the north copper lode, that was seen in the 12 fm. level, where it lay underlaid 24 ft. in a fm.; but whether it has been more perpendicular in its underlay, or else became so small as not to be noticed, I cannot as yet determine; but as there is a large stream of water coming from the end, I think it is further north, and should recommend the end to be continued; the pitches are producing a fair quantity of ore, and working at tribute, from 10s. to 12s. in 17; the tributaries pay all their expenses, and I believe I may say with confidence the men are all getting wages, and that the whole of the ground yet driven through will be taken away at tribute. We sampled at Gawton, 21st March, 62 tons of ore. The quantity would have been greater, but it has been dressed cleaner than usual—consequently, the sample is one and a half produce higher than before. We expect to sample about the same quantity for the present month.

#### WHEAL CALSTOCK MINING COMPANY.

A general meeting of adventurers was held, on the 4th instant, at Messrs. Tyth and Luscombe's offices, Plymouth, when the accounts were presented, showing—amount received on calls, 1162. 10s.; by materials sold, 161. 1s. 4d. = 1178. 11s. 4d.—By mine cost to February 29, 1097. 19s. 11d.—leaving balance against the mine, 802. 11s. 5d.; the amount of calls remaining due being 612. 18s. 6d., of which 302. is owing by shareholders who are creditors to the company.—The statement of liabilities and assets shows—Due to various merchants, 1672. 9s. 6d.; by available assets, 802. 11s. 5d.—leaving balance against the company, and to be provided for, 802. 18s. 1d.:—The following report, from Capt. W. B. Collom, was read to the meeting:—

WHE

## Current Prices of Stocks, Shares, &amp; Metals.

STOCK EXCHANGE, Saturday morning, Eleven o'clock.		
Bank Stock, 9 per Cent., 187		
5 per Cent. Reduced Ann., 81 80		
3 per Cent. Consols Ann., 82 5		
3 per Cent. Annuities, —		
3 1/2 per Cent. Ann., 82 1/2		
Long Annuities, 8 1/2		
India Stock, 10 1/2 per Cent., 228 30		
3 per Cent. Consols for Acc., 82 1/2		
Exchequer Bills, 10000, 3d., 39 41 pm.		

Belgian Bonds, 4 1/2 per Cent., 47
Dutch, 2 1/2 per Cent., 47 1/2 7
Brasilian, 5 per Cent., 59 7 9
Chilian, 6 per Cent., 60 8
Mexican, 5 per Cent., 142 1
Spanish, 5 per Cent., 103
Ditto 3 per Cent., 19 15 1
Portuguese, 5 per Cent., 35
Russian, 5 per Cent., 77

**MINES.**—The transactions in mining shares, during the week, have been of a rather limited character. Although several treaties for shares, in some of our leading mines, are in course of negotiation. The present quotations which are given for such shares, affords an opportunity for investment that does not frequently present itself; and, within the past few months, many capitalists have purchased mine shares as an investment, a security previously pre-judged and entertained as hazardous, who are now deriving the advantages of a more discerning judgment.

The reports we receive from our local correspondents generally, are of a very pleasing and satisfactory nature, as regards the improvements in many of our mines; but the standard for copper ore is so depreciating to selling adventurers, who are necessitated to conform to buyers prices, that it is done with regret and murmuring—hence, the favourable opportunity above referred to, which will give a rich reward to purchasers, in the event of an improved standard.

Inquiries have been made for East Wheal Rose, Levant, West Wheal Seton, South Wheal Francis, but we are not advised of any sales—sellers generally declining prices offered.

Shares in the following mines have been done this week; viz., Devon Great Consols, Trewhaies, Calstock, Tin Vales, East Wheal Friendships, Bedford United, Marke Valley, &c.

The following arrivals of specie, this week, may be noticed. On Friday, the 7th, at Southampton, the Peninsular and Oriental Steam Navigation Company's ship *Sultan*, having 40 packages of specie, value 44,892L 13s. 3d. sterling, and general cargo of valuable merchandise. Arrived at Liverpool, on Saturday, the 8th, the Royal Mail steam-ship, *Cambrian*, with 4000L specie, in freight.

**RAILWAYS.**—Business in the share market was as heavy in the beginning of the week as at any previous period; as the week advanced, however, it improved, and better prices were realised, both at public sales and private bargains. There is reasonable ground for belief, that the low prices brought in some portion of dividend money for investment in several of the more favourite lines. French shares were more firm, from the statement, as reported, that the Government did not propose, absolutely, to take possession of the railways on terms of their own dictation, but that the shareholders would be previously consulted, and the conditions left to their option to accept or refuse. The settling day was on Thursday, which passed off well; the market remained firm, and without alteration.

## RAILWAY TRAFFIC RETURNS.

Name of Railway.	Lghth.	Present ac-tual cost.	Price per share	Last Div.	Traffic Returns
Birkenhead, Lancashire, & Chesh.	15	997,384	37	5 p. c.	£ 674 711
Caledonian	1304	3,594,470	25 1/2	—	3629 —
Dublin and Drogheda	35	754,529	52	—	737 674
Dublin and Kingstown	7	473,282	—	7	797 737
Dundee, Perth, & Aberdeen Junc.	47	415,073	27	8	857 343
East Anglic (Lynn to Ely)	55 1/2	1,062,742	61 1/2	—	474 —
East Lancashire	24	1,733,915	17 1/2	—	11 19 665
Eastern Counties	221 1/2	8,355,709	13 1/2	4	11806 10061
Eastern Union	50	979,926	80	—	1036 92 2
Edinburgh and Glasgow	53	2,375,745	37	6	3368 3306
Edinburgh and Northern	29	953,207	18	—	1151 —
Glasgow, Paisley, and Ayr	642	2,097,321	70	7	2206 2208
Glasgow, Dumbarton, & Greenock	23	845,554	15	4	1084 1003
Gt. Southern & Western, Ireland	110 1/2	1,876,326	16 1/2	—	21 6 1164
Great Western	28 1/2	10,970,636	86	7	19440 18255
Kendal and Windermere	104	169,888	23	—	127 —
Lancaster and Carlisle	70	1,395,193	43 1/2	4	1602 1117
Lancashire and Yorkshire	124 1/2	7,559,618	86	7	8848 8176
London and North Western	428	21,513,354	128	8	38131 39706
London and Blackwall	4	1,241,061	44 1/2	804	912 —
London, Brighton, & South Coast	161 1/2	8,867,822	48 1/2	8	8632 —
London and South-Western	189	6,261,164	43 1/2	8	7847 8017
Londonderry and Enniskillen	141	145,135	16	—	167 —
Manchester, Sheffield, & Lincolnsh.	46	3,336,624	80	5	2047 2026
Maryport and Carlisle	28	440,851	39	3	522 624
Midland Company	402 1/2	9,853,122	964	7	19817 17676
Midland Great Western (Irish)	351	583,776	104	—	978 —
Newcastle and Carlisle	664	1,184,080	101 1/2	6	2015 549
Norfolk	812	1,264,150	62	5	1894 2007
North British	78	2,800,748	20	5	1919 15 3
Shrewsbury and Chester	17	780,272	15 1/2	—	589 520
South Devon	29	1,609,071	20	5	537 527
South-Eastern	165 1/2	6,932,181	22 1/2	61	7703 7710
Taff Vale	38	8,056	—	8	103 1370
Ulster	36	646,211	52	6	842 903
Whitehaven Junction	12	147,095	—	6	167 —
York, Newcastle, & Berwick	2421	4,166,526	294	9	10105 8614
York and North Midland	230 1/2	3,799,297	65	10	7582 5674

## FOREIGN RAILWAYS.

FOREIGN RAILWAYS.					
Amiens and Boulogne	68 1/2	573,338	54	4	1123 —
Antwerp to Ghent (monthly)	31	—	—	—	740 890
Belgian ditto	—	—	—	—	—
Dutch Rheinish	57 1/2	—	4	—	1044 890
Northern of France	211	2,000,000	34	4	11032 11208
Orleans to Bourges (Central)	107 1/2	—	—	—	—
Orleans to Tours	72	600,000	32 1/2	4	2416 2794
Paris and Orleans	82	2,011,720	19	124	— 7862
Paris and Rouen	85	2,082,916	11 1/2	118	2864 8308
Rouen and Havre	59 1/2	—	7	4	1208 891
Strasburg and Basle (monthly)	88	—	6	12	5392 6168
West Flanders (ditto)	—	—	12	—	925 —
Total earnings for last week, £167,913, being an increase of £13,892 over last year.					

## TUTWORK AND TRIBUTE.

**Sir.**—Having entered into a discussion of these matters, a reply to the communications of "The Agents of the Perran St. George United Mines," and "A Mine Agent," will naturally be looked for from myself; and, in the course of my observations, I shall, for the sake of convenience, refer to the former as "The Agents," and to the latter as "An Agent." I observe, in the first place, that a fact is submitted for the consideration of Capt. Seymour and myself, with reference to certain language, touching the motives and experience of "An Agent;" but as nothing is to be found in my letter that can at all be considered contemptuous or impertinent, it will be but an act of fairness on their part to make a retraction of their remarks on this head, so far as I am concerned. It appears that the proposed remedy of "An Agent" has already been carried into effect at the Perran St. George United Mines, to the satisfaction of the agents, who have "set some of their bargains at one-fifth less than their own prices;" and, notwithstanding this, the gettings have amounted to a higher average than formerly. This, at first sight, seems to be good evidence in favour of the new system; but, on examining it a little more minutely, it will be observed, that "The Agents" have unwittingly exhibited a sad want of judgment in fixing their prices, as, if their calculations were correct, how does it happen that, although some of the bargains were taken at one-fifth less, the wages amounted to higher averages than before? It will, I presume, be contended, that the men worked with better spirits than under the old system; but I think a majority of experienced mine agents will bear witness with me, that miners will not work with spirit if they have a bargain under the captain's price. It is immaterial to me whether "The Agents" obtained their present situations through "cousinship" or not—this I leave to Capt. Seymour, who appears to be quite capable of answering for himself.

"An Agent" has acted rather prematurely in bringing this subject before the public, as his principal objection to the old method—viz.: that when men do not get wages this month, they expect to have it made up the next, &c.—is, after all, but an abuse, which can be easily and effectually remedied, if the agents (and it is their duty so to do) will adhere to the old rule, and give a fair price in sight for every pitch and bargain they set.

I assure "An Agent," in the utmost good humour, that his reasons are not of sufficient magnitude to convince me that the old system should be done away with, just because it may, in some instances, have been abused; and I am of opinion, that he would have acted more in conformity with the feelings of a great portion of your readers, if he had made a proposition for an advancement, rather than a reduction, of miners' wages.

## FAIRPLAY.

(The letter of Capt. J. Seymour (Carlton Wheal Hooper), will appear in next Journal.)

**Durham.**—G. Summersen, a pitman, fell down the Dunwell Pit, and was killed. He was near-shattered, and is supposed to have fallen down accidentally.

**Monmouthshire.**—J. Williams, while charging the kiln with iron mine, slipped into the burning mass, and was so seriously injured, that he died three hours after.

**Abergav. Colliery.**—An explosion occurred here, by which three men were severely burnt; one is not expected to survive.

**Carrick.**—On Saturday last, one of the excavators near this town was instantaneously killed by a sudden fall of earth and stones.

**Plymouth's Pits.**—H. Richards had his face severely burnt by an explosion here.

**TREWALLACK MINE.—TO BE SOLD, BY PRIVATE CONTRACT.**—An excellent ENGINE, for pumping or drawing, about 20-inch cylinder, in good condition, with a boiler of 10 tons. For particulars, application to be made to Capt. John Lean, Camborne; or to Mr. H. Ellery, Truro.

N.B.—There are also several tons of pitwork—viz.: 18 pumps, 13-inch; 2 working barrels, 18-inch, nearly new, 2 doorpieces, and 2 windbores.

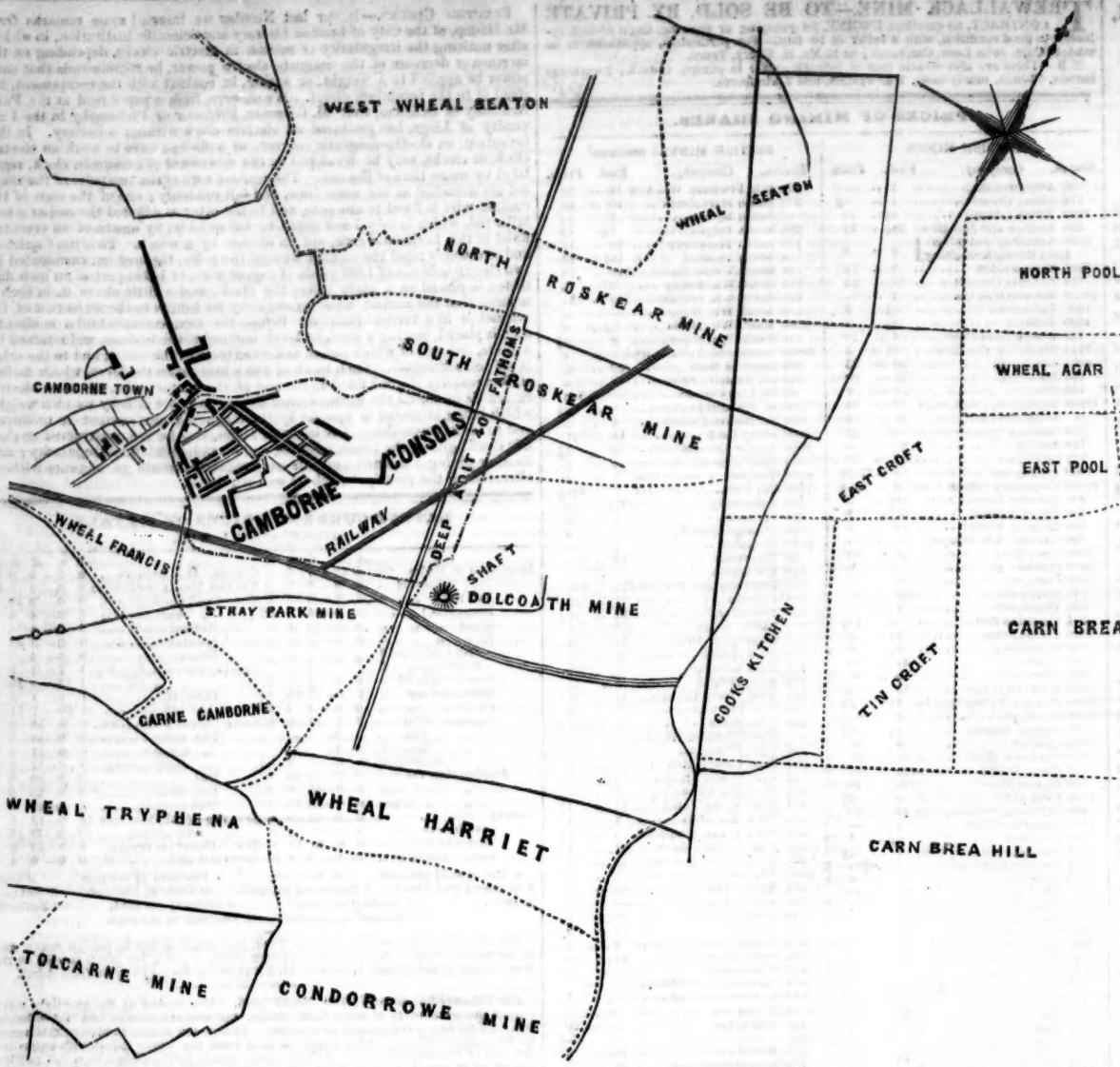
## PRICES OF MINING SHARES.

**BRITISH MINES.**

**BRITISH MINES—continued.**

**Shares. Company. Paid. Price.**

**Shares. Company. Paid. Price.**</



## CAMBORNE CONSOLS MINES.

These sets, in the parish of Camborne, in the county of Cornwall, held under Sir R. R. Vyvyan, Bart., M.P., E. W. W. Pendarves, Esq., M.P., and C. Reynolds, Esq., are situated in, perhaps, the richest metalliferous district in the kingdom, bounded on the south by Stray Park, north by North and South Roskear, Wheal Seton, and West Wheal Seton, east by Dolcoath, Cook's Kitchen, Tincroft, and Carn Brea, and north-east by East Croft, East Pool, and North Pool.

The Dolcoath deep adit, which is driven on a cross-course, divides the sett; and, in its course, intersects the lodes at the depth of 40 fathoms—crossing those of Dolcoath known as the South Entral, the Silver, the Entral, the North Entral, and North Lodes, as also the South lodes in East Wheal Croft—the several lodes being, throughout the sett, whole to surface, the extent of which is upwards of 400 fathoms east and west, and about 300 fathoms north to south; and, judging by the returns from the mines heretofore worked in the immediate vicinity, little or no doubt can be entertained of profitable and lasting returns. Indeed, the advantages which these mines present, coupled with their locality, render them, perhaps, one of the best mining properties in the county of Cornwall.

The nature of the strata is that of the adjacent mines—having large veins courses intersecting the lodes, and which have invariably, in this district, led to lasting and profitable courses of ore.

The South Entral lode alone has been a source of immense wealth to the Dolcoath adventurers, while the silver lode has produced many thousands pounds worth of silver, close upon the eastern boundary. The north lode would appear to have been the primary object of the party who resumed the working of Dolcoath; but from the rich discoveries of copper ore made on the South Entral, and other lodes south, the original object seems to have been neglected, and finally abandoned, on account of difficulties which existed in obtaining a grant of the ground on the north part of the sett; and it is only by a recent arrangement with the proprietors of Camborne Consols, that the adventurers in Dolcoath Mine have been placed in position to pursue operations upon the north part of the sett, the proprietors of Camborne Consols having, by such arrangement, secured the use of a shaft on the South Entral lode—being 80 fathoms deep, or 40 fathoms below adit. The shaft so conceded will afford immediate facility for laying open and driving upon the several lodes referred to, at a depth of 80 fathoms, without the aid or expense of steam machinery, or any other power; and, looking to the produce of the lodes in the neighbourhood, we feel justified in assuming that large returns will be made.

It appears to have been the proprietor's original intention to work the sets by the issue of 1000 shares; but the value and peculiar advantages attendant on the working of the mines being apparent, parties have agreed to furnish the necessary outlay, so as at once to proceed actively in developing the resources of the mine, and yielding returns; it being contemplated, that, with an outlay of 100000 per month, the mines will, at an early day, be brought into a profitable state of working. With this trifling cost the several lodes may be opened upon and explored at 40 and 80 fms.; while, in the adjacent mines, a steam-engine, and the requisite machinery, sinking-shaft, and other costs, has been attended with an outlay of some 15,000/- to 20,000/-, irrespective of the importance to be attached to the adit already driven, which takes the lodes at 40 fms. depth.—The following is a rough estimate of the profits divided, and present value of the mines immediately contiguous to those under notice:—

	Shares divided.	Present value.
Stray Park	100,000	£17,360
Dolcoath	300,000	9,200
Cook's Kitchen	300,000	5,120
Tincroft	200,000	48,000
Carn Brea	150,000	90,000
East Pool	20,000	2,510
Pool and East Croft	200,000	25,820
South Roskear	150,000	10,000
North Roskear	80,000	21,700
Wheal Seton	30,000	108,900
North Pool	5,000	37,000
Total	1,535,000	£275,360

Thus, after making the enormous profits of no less a sum than 1,535,000/-, these mines are, according to our Share List, now worth 375,360/-.

It will be apparent, from the above statement, that the several mines enumerated have yielded vast returns, and, at this moment, maintain a position in the market, best understood by the value attached, as shown in our share list; while a reference is thus made to the mines in the immediate vicinity, as to the returns made; we may, by way of further exposition, refer to the actual profits and cost, as also the present price of some few.

Shares.	Paid.	Price per Share.	Market Value.	Returns.
Carn Brea	1000	£15 0 0	£20 0 0	£200,000 £150,000
Dolcoath	186	30 0 0	50 0 0	9,300 300,000
East Pool	128	5 0 0	15 0 0	1,920 30,000
East Wh. Croft	94	225 0 0	260 0 0	26,320 200,000
North Pool	100	45 0 0	480 0 0	45,000 *
North Roskear	140	5 0 0	130 0 0	18,200 30,000
Wheal Seton	22	214 0 0	300 0 0	62,100 30,000
Total		£297,700	£760,000	

\* We do not the returns made by this mine; at the same time, we may observe, as it is not being put to work.

## Proceedings of Public Companies.

## MEETINGS DURING THE ENSUING WEEK.

MONDAY	Australian Mining Company—offices, at One.
TUESDAY	Dartmoor Consols Mining Company—George & Vulture Tavern; Twelve.
WEDNESDAY	Grand Surrey Docks and Canal Company—offices, at Eleven.
THURSDAY	West Indian Railway—London Tavern, at Twelve for One.
SATURDAY	Wheat Typhena Mining Company—Commercial Hotel, Camborne.

[The meetings of Mining Companies are inserted among the Mining Intelligence.]

## NOTICES TO CORRESPONDENTS.

It will at all times save much trouble, and frequently considerable delay, if communications are simply directed—  
TO THE EDITOR,  
Mining Journal Office,

26, FLEET-STREET, LONDON.

Also, to avoid trouble, POST-OFFICE ORDERS should always be made payable to WILLIAM SALMON MANSELL, as acting for the proprietors.

\*\* We should feel obliged to all pursers, captains, or adventurers, to forward particulars of meetings, &c., of the mines with which they may be connected, on the earliest opportunity; that they may be published in the Journal with as little delay as possible.

EL ORO MINE, MEXICO.—Sir: I should feel obliged if any of your correspondents would inform me of the progress of operations at this mine?—A SUBSCRIBER.

A YOUNG MINER "should apply to a broker—he will find some particulars in our share list.

GADALIN MINES.—The report of Mr. English must necessarily stand over until next week. A very heavy pressure of matter compels us to postpone several of our leading articles, and some letters from correspondents, &c.

The MINING JOURNAL is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all news agents, at the Royal Exchange, and other parts of London.

Now ready, price 2s.

## A Glossary of Mining and Smelting Terms,

USED IN ENGLISH AND FOREIGN MINING DISTRICTS.

Published at the office of the *Mining Journal*, 26, Fleet-street, London; and may be had of John Weale, 59, High Holborn; and through all booksellers in town and country.

THE MINING JOURNAL  
Railway and Commercial Gazette.

LONDON, APRIL 15, 1848.

Among those in the upper ranks of life, who have devoted their capital, time, and energies, to the comfort and well-being of the British miner, and that not alone from interested motives, Sir CHARLES LEMON has long held a distinguished position. Largely connected with mining property, both as a landowner and adventurer, he has ever endeavoured to further legitimate mining, ameliorate the condition of the working miner, and advance the general interests of all connected with his native county. As a supporter of all the admirable institutions in the county, Sir CHARLES stands pre-eminent; and when we recall to mind his magnificent offer, with reference to the establishment of a mining school, some few years since, we can only blush, that he was not supported in so philanthropic and important an undertaking, which, through the apathy or illiberality of his fellow Cornish capitalists, who had obtained their large wealth from the miner's toil, was allowed to fall to the ground. It is with great pleasure we observe, that a mark of esteem and respect is about to be conferred on him by the members of the three Royal Institutions of Cornwall, of which Sir CHARLES is the indefatigable president, by having his bust modelled, and a cast from it placed in the hall of each institution. To give every member an opportunity of testifying his respect on this occasion, it has been decided that the subscription shall be in small sums; and we could wish that it might not be confined to the members, but to the county, as a large portion of the inhabitants would be happy to join in such a demonstration. There are some few points on which, it is true, we have differed with the hon. baronet, with regard to the duties on foreign copper ore; but, conscientiously believing that he has ever been sincere in his expressed opinions, and that he has ever considered the measures he advocated were for the public good, we heartily congratulate the county on putting forth, greatly to their credit, this mark of esteem, for an upright and honourable man.

POLBERRO MINES—NEW ADVENTURE.—We are glad in being able to announce, that the evils which have been anticipated to the populous district of St. Agnes, from the expected abandonment of the Polberro Mines, have been happily obviated, from arrangements having been come to by the different parties interested in the concern, by which the various and heavy claims against it will be satisfied, and funds provided for the further prosecution of the adventurer. We have seen a copy of the prospectus, which details the terms upon which new capital is to be brought into the concern, and the mode in which the management is to be conducted. One thousand new or preferential shares, of 15/- each, are created, which are to be allotted by the finance committee, and Mr. John Taylor, jun., who has been appointed the future manager of the adventure. Of these shares, a number have been taken up by parties already interested in, or rather having claims against, the property; the remaining shares will be allotted to other applicants. We are also informed, that promises of new sets, or licenses, on liberal terms, have been obtained from the Duchy of Cornwall, and the Lords of Tyas. The mines are situate in the parish of St. Agnes, and are some of the most ancient in Cornwall. The sets are very extensive, and are bounded on the north and east by the sea; the surface is 300 ft. above high-water mark, and the underground workings are drained to that depth by adits, driven at the foot of the cliff. Immense quantities of tin have been raised, and large profits realised. There are engines both for pumping and winding; also a stamping-engine, with machinery—perhaps, one of the finest and effective ever built. On the surface, there are offices and buildings of every necessary kind, and ample stocks of materials for carrying on the mines. The mines at present are in the hands of the Registrar of the Stannaries Court, and can be redeemed for 7500/-; while the plant is worth 9000/- to sell by auction. The remaining 7500/- will be applied to carrying out the plans for future working. It is fully expected the mines will become profitable in 12 months, and remain so for a long series of years.

THE MINES OF MEXICO.—The conduct of the United States, during the late invasion of Mexico, has given general satisfaction to those embarked in mining operations in that rich mineral republic. General Scott, and the other commanding officers of the United States army, have, throughout the campaign, held the mining districts to be perfectly inviolable, whether the mines were worked by British or native adventurers, so as not to compromise themselves with the British Government, or prove to the world that their object was rapine and plunder. As a matter of course, this war has caused very great losses to, not only English companies in that country, but natives, by the suspension of their operations at intervals; and, we are informed, that, in consequence of the representations which have been made by this Government on the subject, as far as regards British interests to the American Congress, there is a likelihood that some compensation will be decreed by that Assembly. This is only what ought to be—as nearly the whole of the mines of Mexico are worked by English capital, and that at an enormous outlay; as, unfortunately, the companies have chiefly confined themselves to the working of the old and nearly exhausted mines of the ancient Spaniards, instead of exploring new ones. The peace recently concluded between Mexico and the United States, on condition of the former making a large recompence for the expenses incurred by the war: and the territory of New Mexico, conceded to her by the treaty, will, no doubt, lead to beneficial results, and give a great impetus to mining operations in that portion now of the United States. The Congress has decreed, that the concessions which had been made to various parties, by the Mexican Government, in that hitherto neglected portion of the republic, will be guaranteed by it, under specific conditions; and that they can remain as American citizens, or receive a certain compensation for their mines, should they wish to relinquish their working, and return to their mother country, or present republic of Mexico. The Americans have long had the ambitious desire of acquiring this new territory, which the recent treaty has completed, although at a large pecuniary cost; but this they are satisfied with, as it has not involved them in a war with England, and will give them the opportunity of carrying out the grand project of joining the Atlantic with the Pacific, by means of a navigable ship canal, and thus open enormous facilities for the extension of their commerce.

SHROPSHIRE MINERAL RAILWAY.—We understand the disagreements existing between the engineer and direction of this company are about being brought to a close—the parties having consented to abide by the decision of arbitrators, who are now sitting, hearing evidence, at the Gray's Inn Coffee-house. Some curious matter, we understand, are being brought to light—for instance, several miles of the plans and sections are missing, and much doubt is thrown, of course, on their correctness—nay, even their execution not credited; and the engineer, it appears, must have regaled themselves famously at the Tonbridge Hotel, Ironbridge, as the venerable handiwork of that establishment is summed up, as rough for the correctness of her bill, amounting to 9000/- "Engineering difficulties," at least, were no obstacles to the overcoming of that part of the project. The general opinion seems to be, that the existence of the undertaking might have been prolonged—certainly so, with advantage to some parties, if not to the shareholders.

## PROGRESS OF FRENCH MINING INDUSTRY.

[FROM OUR PARIS CORRESPONDENT.]

On the whole, things have been better, during the last few days, than at any period since the Revolution. The funds, railway, mining, and other shares, have all advanced in the Bourse; business has been less prostrated; in Paris there have been no disturbances, no alarming demonstrations; and there has been something like a revival of confidence. Moreover, the alarm which was felt, with respect to the general elections, has almost entirely subsided, owing to the peaceful and orderly manner in which the elections of officers of the National Guard have gone off. In order not to be accused of drawing too favourable a picture of the present state of things, it may be mentioned, that disturbances have taken place at Havre, Toulouse, Rheims, Valence, and some other places; but, so far from these affairs creating any disquietude, they have had quite a contrary effect; for, in every case the disturbances were put down by the National Guard, they have afforded proof, that the orderly and well-disposed are stronger than the turbulent.

I learn, on good authority, that the Government is quite determined on getting all the railways into its own hands. You will see, that some of the newspapers state, that it intends also to take mines, insurance companies, iron works, &c. But for my part, I cannot believe that it entertains any such wild intention.

The alarm which was excited last week, with respect to this matter, by the unscrupulous manner in which the Government sequestered the Orleans and Centre Railways, has subsided. People now see, that there are 10,000 very good reasons why a Government should be anxious to be at the command and management of the great lines of railway communication, especially in a country like France, where the State has been for centuries the only road-maker and road manager, and where, besides, the railways have been formed, in a great measure, by its capital. But people also see, that there is not one reason why the Government should undertake to work mines, and carry on furnaces. To do so, in fact, would be plunging into the wild schemes of the Socialists, who contend that the State ought to do everything—even to the manufacture and selling of tallow candles and Lucifer matches.

As regards England, I am strongly inclined to think that it will be decidedly to her interest for the Government to take the railways. Once in the position of a railway proprietor, the Government would soon become alive to the burden and wickedness of the ironmasters' monopoly. It would soon experience the disadvantage of having to pay them about one-third more for iron than England and Belgium would supply it for. This would naturally lead to inquiry, and inquiry would lead to the discovery, that a most unrighteous and unreasonable monopoly exists, and has existed for years, in a country which professes to allow no monopoly, no privilege. Need we say, that such a discovery would be promptly followed by the complete annihilation of the monopoly.

A few weeks ago, I referred to the returns of the Government mining engineers, respecting the manufacture of steel. The *Journal des Chemins de Fer et des Mines* also referred to the same subject; and, like the *Mining Journal*, concurred in recommending an alteration in the tariffs, so as to increase the importation of good steel. These remarks appear to have greatly displeased certain parties in this country, who are interested in keeping things as they are. They have accordingly drawn up an answer to them, of which I give the substance, in the belief that it will be interesting to your readers. First of all, then, they begin by urging that it is not true, as stated in the report of the engineers employed by the Government, that France does not produce the ore adapted to produce good steel. "M. Fournel, chief engineer of the mines in Africa," they state, "has shown that our African colony could produce precious ores, exactly the same as those of Sweden. M. Lefrancois and M. Gaymard, mining engineers, have shown, after answering those who recommend the English steel, that our works, in the departments of the Isère, Corsica, and the Pyrenees, produce steel of a superior quality; and that, by the introduction of certain improvements, the iron of Sweden might be entirely dispensed with." But they continue, "what is meant by Swedish iron? Is it the iron of the first quality? That iron has belonged, for more than a century, to the firm of Sykes, of Hull, in England; and it would be impossible for France to procure a single pound of it, even second-hand. On this point, no dispute is possible; the fact is notorious. Is it the iron of Sweden of the second quality? France has no need of it; for, notwithstanding all that is said, our country produces the greatest and finest variety of steel in any of Europe. With such materials France could manufacture as good iron as that of Sweden, of which the firm of Sykes has obtained possession for ever. In fact the steel she makes is excellent, and this is generally admitted at St. Etienne. We have even seen the English themselves request to be allowed to take away cannon manufactured at St. Gervais, in the department of the Isère, on account of the excellent material of which they were made, and which the English were desirous of imitating." The note, from which these citations are made, then proceeds to remonstrate against the attempt to modify the tariff, which, by affording protection to the *acières fondus* and the *acières décentrées*, has caused the manufacture of them to take a vast development. But, on this point, the note is not very strong; for though it says that the national manufacture has become so extensive, and so cheap, that it beats the foreign out of the market, it yet asks for protection.

Some of the newspapers have made a great splutter about the bad spirit which, they pretend, is displayed in the mining districts. I have journals and letters from those parts of the country, and find no accounts at all calculated to excite alarm. Neither the journals of the northern department, nor of the Loire, speak of the miners being on strike, or of their having committed disturbances. The accounts that I have, on the contrary, are, generally speaking, very satisfactory. In the Haute Marne, for example, which is the great iron district of France, the men employed in the iron-works have voluntarily offered to work for less wages, so long as the commercial crisis shall continue.

Among the meetings of shareholders which are about to be held, are those of the Loire on the 15th; of the Vieille Montagne on the 29th; and of Valentin Cocq on the 20th.

It is on the 22d of this month, that the Minister of Marine will receive contracts for the supply of several thousand tons of English coal for the navy.—*Paris, Thursday.*

**BELGIUM.**—The men employed at several of the coal-pits have struck for an advance of wages, or for other causes; but nowhere have they committed much mischief.

There was rather a considerable falling off in the exports of coal during the first two months of the present year, compared with the same period of the last and preceding year; but in iron, &c., there has been an increase.

**GOVERNMENT CONTRACT FOR COALS.**—The Admiralty Commissioners have given notice that, on Thursday, the 27th instant, they will be ready to treat with such persons as are willing to contract for supplying the dockyard at Haulbowline with 1500 tons of Welsh coals, fit for the service of the navy. On Tuesday last, the following contracts were concluded:—5000 tons at Dover; Holyhead, 2500 tons; Kingston-on-Hull, 1400 tons; Port Patrick and Donegadhes, 2500 tons, within 12 months from 1st May next. There was strong competition, and several offers were extremely low; Government, however, is not bound to accept the lowest tender, which gives an opportunity for considerable favouritism among the executive of the Admiralty. Like many other contracts the Government ones are open to much abuse, which it would be well for the mining interest to reform, and throw them open to fair competition, which, unfortunately, is not the case at present, being mostly confined to the few who have interest with secretaries and others at head-quarters.

**MINING ON THE CONTINENT.**—As we have stated before, the miner, in every country, is a distinct being from any other class of his species. He troubles not his mind with intestine political commotions at home, or revolutions abroad—the whole of his ideas are concentrated in the bowels of the earth, and the prosperity of the mine he is working on exploring, careless of all the great passing events of the day, which occupy the other portion of mankind, so long as he and his family are provided for by his secluded industry. According to the mining reports from all the continental states, the changes and commotions that have and are taking place, have not, to any considerable degree, impeded the mining industry of the different states as the demand for metal of every description is, on the contrary, on the increase, and the miners in full work, as well as the majority of the furnaces, to supply the demands. A vast number of extra hands are employed in working the rich gold mines of Russia, in the Altai and Ural Mountains, and Siberia, by the Government, at excellent pay, and many other privileges to those in the latter, which they little expected, or ever could have hoped for, from the authorities, or the autocrat. In Austria and Sweden the greatest impetus is now also given to mining operations, although the political state of both may be said not the most cheering to enterprise. In no instance have the miners in either of the above countries taken any part in the passing events, which have caused so great a depression to every other portion of the working classes, and the general trade and resources of the country.

## EXPERIMENTS ON COAL—OFFICIAL REPORT.—No. VI.

*Comparison between the Effects produced by the Boilers at Par Cossols Mine, and those obtained from that employed for the purposes of the Investigation.*

A large amount of facts relative to the evaporative powers of various coals having been amassed during the progress of this inquiry, it was thought desirable to ascertain how nearly these results approach the maximum duty obtained from Cornish boilers, and thus furnish a means of comparison between the apparatus employed for the purpose of this investigation, and larger boilers, of similar construction, as used for practical purposes. Experiments have at different times been made, in order to ascertain, with accuracy, the quantity of water which can, under the most favourable circumstances, be evaporated from a given temperature, by the combustion of 1 lb. of coal.

No very decisive results appear, however, to have been arrived at; as, on consulting those of the different experimentalists, considerable differences will be observed. Smeaton, who seems to have been the first to pay serious attention to this subject, found, in the year 1772, that 1 lb. of Newcastle coal evaporated 7.88 lbs. of water from 212°. Watt, who turned his attention to this subject in the year 1788, arrived at the conclusion that 8.62 lbs. of water might be evaporated from the temperature of 212° by 1 lb. of coal employed in his experiments; while Mr. Wicksteed, in the year 1840, found that 1 lb. of Merthyr coal could be made to evaporate 9.493 lbs. of water from the temperature of 20°. Fall, which is equal to the evaporation of 10.746 lbs. from the temperature of 212°.

Some experiments were also made, about this time, on the boilers of Loam's engine, at the United Mines in Cornwall, to which was adapted an apparatus which correctly measured the quantity of water injected into the boilers. The experiment was continued six months; and, during that time, it was found that 234.910 cubic ft. of water, at the temperature of 102° Fahr., had been pumped into the boiler, and that 700 tons of coal had been consumed in its evaporation; thus showing, that 15 cubic ft. of water, at 212°, had been evaporated for each 100 lbs. of coal used; or that each pound of coal consumed had evaporated 10.29 lbs. of water from the temperature of 212° Fahr.

It will be observed, that these results not only differ considerably from each other, but also that no means were employed for the purpose of ascertaining the chemical composition of the various coals used, which should, we conceive, form an important part of all such investigations. In order, therefore, to obviate this inconvenience, as well as to take advantage of such improvements as may have been introduced since the dates of the foregoing experiments, it was determined to make a similar inquiry into the evaporating powers of the boilers of one of the best Cornish engines of the present day. That chosen for this purpose, was the large pumping-engine at Par Cossols Mine, where every facility was afforded by Mr. West, the engineer, for carrying on the experiments effectually. This engine is an 80, with a 12-ft. stroke in the cylinder, and is worked by two boilers\*, to which is added an arrangement, by which the feed-water is heated to near the boiling-point before entering the boiler. This is effected by means of the waste heat escaping from the flues; and the apparatus consists of two wrought-iron tubes, each about 20 in. diameter, placed above each other, and parallel to the axis of the boilers, in the brickwork of which they are inclosed. The feed-water is pumped into the upper tube by means of the usual arrangements, and then descends through a pipe into the lower one, from whence it passes into the boiler itself. Both these tubes are exposed in their whole length to the action of the heated gases coming from the fires, which, after having made the circuit of the boilers, pass round the warming tubes before arriving at the base of the chimney; the water in the tubes is thus heated to about 212° by means of the heat absorbed from the gases passing through the flues, and of which the temperature is reduced to about 300° by the time they arrive at the base of the chimney. Our experiments were conducted in the following manner:—

It was first necessary to be enabled to measure with accuracy the quantity of water supplied to the boilers; and, in order to effect this, a large cistern was placed near the air-pump, from the cistern of which it could, by a simple arrangement, be filled with water. The connecting-pipe between the feed-pump and air-pump cistern was then removed, and a pipe fitted to the feed-pump, which reached the bottom of the reservoir. The cistern was also provided with a waste-pipe, which prevented its being filled beyond a certain point; it was then filled with water and pumped out, in order to ascertain at what level the pump ceased to act. This point being decided, water was weighed into the cistern until it reached the level of the waste-pipe before mentioned, when it was found to contain 1260 lbs. It was also necessary to be enabled to stop the action of the feed-pump during the filling up of the cistern; and this was accomplished by means of a stop-cock placed in the feed-pump immediately under the stuffing-box, which, when opened, let in air and prevented the formation of a vacuum. The measurement of the injected water was thus rendered excessively easy, as it was only necessary to count the cisterns pumped into the boilers, and open the stop-cock whilst it was being filled, in order to do so with accuracy.

The arrangements for measuring the water having been completed, the experiment was begun; and, at the expiration of 462 hours, it was found that 95 cisterns of water had passed into the boiler, and that 11,730 lbs. of coal had been consumed; or, in other words, that 11,730 lbs. of coal had been consumed in order to evaporate 11,700 lbs. of water from the temperature of 92° Fahr., which gives 10,204 lbs. of water evaporated from that temperature for every pound of coal consumed. If, as in the former part of this report, we take 212° as the standard temperature, we find that each pound of coal employed had evaporated 11,428 lbs. of water from the boiling point.

The combustible employed during this experiment consisted of a mixture of Swansea and Bury coal; but, in what proportion, or from what pits, we were unable to learn. An analysis of the mixture was, however, made by my colleague, Mr. H. How, who obtained the following results:—

Carbon	84.19	Nitrogen	0.80
Hydrogen	4.19	Ash	8.06
Oxygen	0.86	Sulphur	1.90=190.0

These coals were also found to contain 6 per cent. of water, the greater portion of which had been intentionally added, for the purpose of communicating intensity to the heat obtained during their combustion. Having now ascertained the quantity of water evaporated by 1 lb. of coal, as well as the composition of the coal employed, it remains to institute a comparison between the evaporative capacity of the boilers experimented on, and that employed for the purposes of this inquiry. In order to have done this, it would have been desirable to have made a comparative experiment with the same coal when consumed in the latter boiler; but, as circumstances prevented this from being done, we may obtain nearly the same results by consulting the table of analyses, and selecting a coal having as nearly as possible the same composition as that in question. If we compare the following analyses, it will be found that the Mynydd Newydd coals are so similar in their composition to those used in the Cornish experiment, as to be considered practically identical:—

Mynydd Newydd	Carbon	84.26	Nitrogen	0.84
	Hydrogen	5.61		4.19
	Ash	3.29		8.06
	Sulphur	1.21		1.90
	Nitrogen	1.56		0.80
	Oxygen	3.52=100.00		0.86=100.00

The practical trial made on the Mynydd Newydd coal in the experimental boiler, gave 9.52 as its evaporative value; if, then, we assume that the two coals possessed equal calorific powers, the evaporative values of the two boilers will evidently be as 9.52 is to 11.42; or, in other words, the Cornish boilers will be found to possess a superiority of nearly 20 per cent. over that used for the purposes of the investigation. Assuming, then, the economic quality of these two coals, we have only to multiply the results obtained by the various coals during our own experiments by 1/19.95, in order to ascertain their several evaporative values if consumed under the Cornish boilers.

The following table has been calculated upon this assumption, and should, therefore, be considered only as an approximation.

Name of coal.	Admiralty boiler.	Cornish boiler.
	Actual.	Theoretical.
Mynydd Newydd	9.52	11.42
Grangola	9.35	11.21
Anthracite (Jones and Aubrey)	9.46	10.72
Old Castle Ffery Vein	8.94	11.27
Ward's Ffery Vein	9.40	11.09
Bines	9.94	10.62
Llangennech	8.86	10.72
Pentrefelin	8.79	10.46
Powell's Duffryn	6.36	7.62
Three-quarter Rock Vein	10.149	12.17
Cwm Ffod Rock Vein	8.84	10.60
Cwm Nanty-Groes	8.70	10.43
Resolven	8.42	10.10
Pontypool	9.53	11.43
Bodwra	9.79	11.74
Ebbw Vale	10.21	12.24
Porthmaur	7.53	9.03
Daikeith Jewel Seam	7.08	8.49
Coronation Seam	7.71	9.24
Walls End Elgin	8.46	10.14
Fordel Splant	7.66	9.06
Grangemouth	7.40	8.87
Coleshill	8.00	9.59
Broomhill	7.30	8.75
Lydney	8.52	10.22
Silevadagh (Irish)	9.88	11.81
Wylam's Patent Fuel	8.92	11.70
Warlich's	10.36	12.42
Bell's	8.53	10.23

\* The boilers on which this experiment was made are each 32 ft. in length, and 6 ft. 3 in. in diameter. Each boiler presents a heating surface of 950 square ft., and the warming apparatus offers a surface of 560 square ft. to the action of the heated gases.

† We took care to assure ourselves, by means of the gauges, that the boiler contained the same quantity of water at the beginning and close of the experiments.

‡ The Mynydd Newydd coal, supposing there was no loss of heat, is capable of evaporating 14.90 lbs. of water, and the Welsh coal, used in Cornwall, 14.28 lbs.; but, considering that this heat cannot be obtained in practice, these economic values, for calculation might be taken as equal, without introducing any serious error.

**OAK FARM IRON-WORKS, KINGSWINFORD.**—We are gratified to learn, that at a meeting of the creditors of Messrs. Paterson, Walker, Boydell, and Roper, on Thursday, a service of plate, valued at about 3000l., which was presented to Mr. Boydell by the nobility and gentry of North Wales (together with a purse of 400 guineas), as a testimonial of the esteem he enjoyed in that locality prior to his removal to his late works, it was agreed should be returned to that gentleman—who, it appeared, had been thought worthy of it, for the great ability he had displayed in his efforts to improve that district. In addition to this testimonial—among the subscribers to which were the Marquis of Westminster and the Hon. E. Mostyn—another service of plate, presented at the same time, by the humbler classes of society in that district, and which cost 260l., was also returned to Mr. Boydell.

**THE CONWAY TUBE.**—This immense tube, weighing 1300 tons, was raised 14 ft. on Monday morning last, during a storm of high wind. Only 10 men were employed during the operation, and the press were found to answer admirably—the rising was at the rate of 12 ft. per hour, and the operations were superintended by Mr. E. Clark, the assistant engineer to Mr. H. Stephenson, at Conway. We understand that a party of the directors, and their friends, intend to accompany the first train which is to pass through this extraordinary bridge on Tuesday next.

## Original Correspondence.

## MINING IN SPAIN.

SIR.—Having observed that for many months your attention has not been drawn to this country, you may not consider the following remarks entirely devoid of interest. The northern coast of Spain chiefly occupied with mining is the Asturias, which may be divided into three important districts—first, that of Cabrales, for copper; secondly, that of Langreo, for coal; and, lastly, Trubia Mieres and La Pola de Lena, for quicksilver and iron: each appears to have its future prospects and objects exactly defined. Beginning, therefore, with the first—it is undoubtedly the only district where copper has been worked with any success; and the sales at Swanssea of the 16th ult. show that 43 tons, being the produce of the first shipment, realised 511*l.*, quite a new feature in the English markets. The quality of the ore is grey sulphure, containing silver, although apparently too insignificant in quantity to render it valuable for that metal. About 300 tons remain in warehouses from one mine alone, a second cargo of which is being prepared for shipment—the cleaning requiring great care, owing to the land carriage to the coast costing 20*s.* per ton. The ore is found in killas, and the general country limestone, with coal measures in the neighbourhood, although neither the quality nor quantity render them serviceable for smelting, particularly with charcoal of excellent quality, at 16*s.* per ton. Advantage is about to be taken of the unlimited water-power, to erect, at the base of the mountain, in which is situated the principal mine, smelting-works, as the law of Spain prohibits the exportation of ore, and it is only as a special favour that permission to export it is granted. There are six mines, more or less, worked by this company; and although none can be said to possess decidedly regular lodes, yet the pockets are extremely rich, many of the stones weighing several hundred weights, yielding 18 to 20 per cent.—one pocket alone having already produced 400 tons, with every certainty of at least as much more being in sight; preparations are being made to give them fair trial on a large scale this year—thus an interesting problem will be solved, as to whether that district of Asturias can be ranked permanently as a copper country. The shafts, galleries, and outworks, give the spot a more legitimate appearance than is noticeable in Spanish undertakings, which is mainly due to the zeal, intelligence, and untiring activity of Capt. Thomas Roskrow, late of Cornwall; the property belongs to a Spanish company, formed at Madrid, called the "Cantabria," or Cantabrian Mining Association—the brother of the present Minister of Finance is the principal shareholder, although some shares are held in England.

The second district, or Langreo, situated on the river Nalon, forms the centre of the Great Asturian coal basin, and is, undoubtedly, destined to supply a considerable portion of foreign markets. There are two leading companies—one originally started by Señor Aguado, Marquis of Las Marismas, now the property of the Duke of Rianzares, and is a private undertaking; the other is the Cantabrian already spoken of, having a nominal capital of 100,000*l.*, of which, however, only 10,000*l.* is paid up, and represented by 2500 shares, of 4*s.* each; a second emission of a similar amount is to take place, for the purpose of making a tramroad. All the pits, galleries, shops, and other works, are completed, being ready to supply any demand; and, in order to make the concern as complete as possible, a grant has been obtained, which will enable the company to make a tramroad to connect all the mines (about 40 in number) together, and run down to the railway. The total number of seams, varying from 2 ft. to 12 ft., already discovered, amounts to 80; or rather, I should say that, the property is intersected by a river, the seams are repeated on both sides—so that, more correctly speaking, there are 40 in a vertical stratification of sandstone. The present sale is limited, owing to the expense and difficulty of carrying the coal to the coast, a distance of 22 miles, which has induced the parties interested in the above two companies to form a separate one, with a capital of 200,000*l.*, for the purpose of making a railway to the coast. The surveys were completed early last year, and the works commenced under the direction of a Spanish engineer, during the summer, since which time the most extraordinary energy has been displayed—so much so, that either this winter, or early next spring, two-thirds of the distance will be opened, the greater part of the earthwork being completed, and the bridges above water, or entirely arched over. That such activity should be displayed by a Spanish company is the more remarkable, as they are justly accused of indifference and apathy; but their business-like conduct on the present occasion is, perhaps, in part owing to several of the committee having been for many years emigrants in England, and the more prominent part being under the management of Dr. Emilio Sancho, so well known in London for his official discharge of the onerous duties of President of the Spanish Financial Commission; such good management, and the *bond fide* nature of the undertaking, gives the greatest possible confidence in its success, and has enabled it to ride through the storm that has wrecked nearly every company started of late in Spain. It is impossible to doubt the important commercial results that await Spain on the completion of this work—it is, therefore, not astonishing that the Government has brought forward a bill, guaranteeing to this and similar lines a minimum of interest of 6 per cent. until they are open—consequently, the greatest activity must soon develop itself in Asturias. Coal at the pit's mouth costs the miner 3*s.* 6*d.* per ton; the railway which, owing to special privileges, will not cost 200,000*l.*, will carry the coal to the coast for 2*s.* 6*d.*, leaving for itself a large profit; and, lastly, the shipping of all nations is equally favoured in Spanish ports for loading coal; the very best quality screened will thus be sold on board at 6*s.* per ton, exclusive of such profit as the miners are fairly entitled to. For the present, beautiful turnpike-road, made by the late Marquis of Aguado, starts from Sama, the market town equidistant from the mines of the two companies, and enables the countrymen, when they have no other employment for the cattle, to carry coal to the coast; by such means of carriage the exports from Gijon, the port to which the railway is being made, must naturally be limited, and amounts to about 40,000 tons. I have not alluded to the coal mines of the Asturian Mining Company, at Mieres, and those under the management of Mr. Paillette, a distinguished French engineer, they being from seven to ten miles further from the coast, without as yet any prospect of a railway—therefore, they are not likely to become coal exporters; nevertheless, they possess excellent seams, the produce of which will be required for the blast-furnaces, and other metallurgical establishments rising in that district, which I will describe in my next.

Madrid, April 3.

CONSTANT READER.

## ANTHRACITE COAL.

SIR.—As anthracite coal, owing to its being free from smoke in combustion, is highly desirable as a fuel for the use of marine and locomotive engines, it has had, therefore, the attention of scientific and practical men for several years; but either their researches, or inventions, have proved a failure—or, if any has partially succeeded, it has been attended with additional care on the part of the consumer: when that is the case we often see really good inventions thrown aside, under the familiar term of "failures." The first locomotive engine, manufactured with the view of burning anthracite fuel, was built by the Llanelly Railway and Dock Company in 1842 and 1843, under the direction and superintendence of Mr. William Veran, a Cornish engineer, which turned out a complete failure. The engine was called the *Prince of Wales*. It was again rebuilt, and worked with coke for some time, until the coalowners in the Cwm Ammon and Swanssea Valley expressed a wish to have another trial of the anthracite coal; and showing to the directors the advantages arising therefrom to their traffic by an increased consumption—and, consequently, an increase in tolls might be expected—the directors again boldly came forward, and offered their engine for alteration (the same engine, the *Prince of Wales*), and which at the time required extensive repairs. They then instructed Mr. William Stubbs, a north country engineer, to carry out his views in the alteration of the engine, so as to burn anthracite coal. After the necessary lapse of time, which was somewhat long, for the repairs and alterations, the *Prince of Wales* was again brought out as a stone coal engine; but, after repeated unsuccessful trials with that coal, it was abandoned, and the *Prince of Wales* was again a coke engine. Sometime again elapsed, when the Llanelly Railway and Dock Company had another locomotive engine requiring extensive boiler repairs. Permission was then given by the directors, and the alterations were made, under the direction of Mr. John Rogers, a Welch engineer; but, like the previous experiments, it was again a failure, and the engine is now using coke. There is one observation I may here make, which may, in some measure, account for those failures—that, in making the alterations, the engineer had to construct the boiler, or fire-place, in such a way, that, should they not succeed in the use of stone coal, they would be able to burn coke. This, in my opinion, may be the principal reason of the whole of the failures; but that can only be decided when we have more knowledge on the subject than we at present possess. Mr. Veran's boiler was leaky and

bad; the whole of the workmanship was of an inferior kind—locomotive making at that period being little understood in Wales—but he had great heating surface, and used a double fire—one in his tube, and one underneath his boiler outside. Stubbs's plan I am not so well acquainted with—and I do not think it was entirely carried out; he had his fire in a longitudinal tube, the bottom of which was perforated with holes underneath the fire-grates; the outer and inner tubes were connected with small tubes. The front of his fire was filled with holes in a similar manner, to give a quantity of air for combustion. Mr. Rogers's plan was very similar to that of Mr. Stubbs's—the difference consisting in the former having a square fire-box, with similar holes front and back of his fire-box.

This brings us up to the most recent experiments with anthracite in locomotives; but, during the experiments with locomotives, there has been a more successful step taken with respect to the use of anthracite in permanent and marine engines. This was due to Mr. Kymer, of London, under the management and superintendence of Mr. Leighton—a very scientific and persevering gentleman.

Descriptions of Messrs. Kymer and Leighton's patent, and an account of the trial in one of her Majesty's steam-vessels, which failed, owing to the imperfect construction of some of the machinery of the fanning apparatus, was given in the *Mining Journal* at the period when it took place. Notwithstanding the many trials and failures which have been made, I think the object ought not to be abandoned; and, when the South Wales Railway Company become more interested in this district, it is to be hoped they will use their influence in investigating the merits of anthracite.

Llanelli, April 10.

## X SIMS'S SUBSTITUTE FOR HORIZONTAL RODS.

SIR.—For the information of your readers who may feel interested in the success of the plan, proposed by Mr. Sims, of substituting water in a close pipe for the horizontal rods now used underground for draining parts of a mine distant from the engine, I beg to state, that the plan, or rather a modification of it, is perfectly practicable. This I am enabled to state with confidence, after having had nearly 20 years' experience in the working of a machine of this description—I allude to a machine which I thought had been more generally known, constructed from the designs of the late Mr. Arthur Woolf, nearly 20 years ago, for Messrs. Bolitho and Co.'s tan-yard at Penzance, in Cornwall, where it has been satisfactorily doing duty ever since. Messrs. Bolitho and Co. having at the time a water-wheel of surplus power on premises at a distance, it was desirable to apply that power to the working of pumps in the tan-yard. Mr. Woolf was consulted as to the best mode of effecting their object; and he proposed to apply two open top cylinders, fitted with pistons—one placed near, and worked by a crank motion from the water-wheel; the other placed in the tan-pit yard; and the communication of motion between the two pistons to be made through the aid of water in a close pipe. The expansion and contraction of the water under a variable temperature, as well as the trifling leakages by the pistons, &c., was at first provided for by air compensation valves; air under the piston, however, was found to be very objectionable, and changed for water, which was used instead. We had some difficulty at first to get the compensating valves to act properly. I, subsequently, removed the cylinders from the machine, and placed plunger poles to work through stuffing-boxes instead of them, and also made some alterations to improve the valve gear; since which, the machine has continued working on, with very trifling repairs and attention, to the present day, and in a very satisfactory manner. It makes, when working at full speed, 25 strokes, of 2 ft. in length, per minute. The diameter of the plunger pole at the tan-yard end of the machine is 6 in., and it gives motion to two 7-in. pumps, which draw their water from a depth of 10 ft.; the pumps are arranged one on each side of the machine, and attached to the outer ends of a cross head, fixed on to the top of the plunger.

Copperhouse Foundry, Hayle, Cornwall, April 13.

R. JENKYN.

## X OUR STEAM NAVY—NEGLECTED IMPROVEMENTS.

SIR.—On considering the altered position of contending navies in case of war, which the application of steam to such purposes is sure to introduce, it requires no prophet to predict the great superiority which that nation will possess that avails itself of the most improved and extensive application of such power. Hence the article you gave in your last week's *Mining Journal* is, under present aspects, most opportune; for a steam navy, as you very justly remark, "though a permanent, it is not a stationary, force—its locomotive capacity is one of its leading recommendations." Such recommendations, with the other numerous advantages it possesses, render it obvious that the nation which provides itself with such means of defence, will act the most prudent part—the more especially so, if such advantages be enhanced by such improvements as will, with the least freight of coals and machinery, produce the greatest power and efficiency in the engines—at the same time, admitting of engines and boilers being placed below the water-line, so as to protect them from the shot of the enemy; with the boilers, moreover, so constructed, as at once to be perfectly safe from ordinary explosions, and what is, perhaps, in this case, of more moment still, if struck by the shot of the enemy, no serious injury would ensue to the crew.

These, Sir, are all desiderata of the very first importance to naval tactics and to naval victory—providing, as they do, the means for outspedding the enemy; or, owing to the more lavish consumption of coal, induced by the common system, the enemy relying on such system, would be brought to a dead stand for want of motive-power, or from the immense boilers necessitated on such a system, and containing, as they do, the enormous amount of explosive matter, which stand so far above the water-line—liable, at every moment, by the enemy's shot, to be converted into the most destructive magazine, spreading desolation and dismay through the whole crew, if not sinking the vessel itself.

These, Sir—not to enumerate here further the many other advantages consequent upon such improvements—are assuredly of such transcendent importance in naval warfare, and point so decidedly to naval victory, as that, if it be not my own fault, I need not fear but other nations will afford me the encouragement which will put to flight the secret denunciations of those who, in these matters, are the Serpents and Pharisees of England, who, I am well aware, *obscurc* me at every point; and not a few of whose speeches and objections I would show the futility and unfairness of, would they have the courage to make them openly as men. But wily and prudent is the spirit which opposes me—fully alive are the men actuated by such spirit of the fact, that persecution, in our day, must avail itself of those weapons of warfare best adapted to the spirit of the age—the nature of the innovation, and circumstances and character of the innovator, whom, if they can, they are resolved to sacrifice at any cost to their country and to mankind. These men know full well, that if statements or principles are fallacious, or practical proof be wanting, that then their prudence does not shrink from putting down the innovator by public denunciation and exposure. But if all these are on the innovator's side, then they know their obstructive proceedings are most likely to be successful, and they (the actors) more concealed; whilst the inventor, bound by their insidious chains, finds himself placed in the anomalous position in which I have been constrained to appear in the opinion of those who, knowing what I have stated, and aware that I am not a wilful deceiver, consider it an insoluble problem, that, if one-tenth of the advantages I state be really derivable from my inventions, engineers cannot be found to countenance or recommend it. How is it, they ask, that these men privately condemn it? Once for all, to such well-meaning sceptics I reply thus publicly, by asking them to read for themselves those numerous lessons of darkest dye which history presents on the treatment of those who have devoted their energies to services beneficial to the myriads of mankind; let them mark carefully how the spirit of persecution has, in all ages, adapted itself so as most effectually to crush individuals, and to rob mankind of the inestimable advantages such individuals have laboured incessantly to place at the command of humanity. If they will do this, perhaps they will discover why my position and treatment has been such—viz.: that of secret denunciation—whilst my statements have been clear as to principles—my inferences legitimate ones, and free from mystification—and the result of my experiments consonant with the whole experience derived from the steam-engine. Let them here further remember, that men generally will not trust their own judgment on such matters as I am engaged in, but, as it were, naturally seek the opinion of others; yet mankind are sufficiently discriminating to discern on which side of an open controversy, truth preponderates. Of this my assailants are fully aware, and hence not one of them has yet met me openly. It is, Sir, to expose these treacherous tactics that I address you—it is to vindicate my claim to English treatment, and, if possible, to prevail upon Englishmen to examine for themselves, whether or not I am presenting for their adoption, and soliciting their attention to, improvements, equal, in a national point of view, with those which Watt conferred—who, by-the-way, was treated by the same class much the same manner. Of the treatment Watt received, and from whom it came, we have ample evidence, as Arago, in his life of Watt, when relating the spirit of injustice and obstruction by which he was beset, makes use of the following words:—"The author of a discovery has always to contend with those whose interests may be affected—with the obstinate partisans of whatever is ancient—and, finally, with those who are jealous; and these three classes united, form (must we confess it) the great majority of the public."

Birmingham, April 12.

T. CRADDOCK.

## PATENT LAW REFORM.

SIR.—Having carefully read the petition got up by Mr. Campin for reform in the patent laws, and perceiving that the reform thereby solicited would tend to a much more equitable law on the subject, I think Mr. Campin deserves, for his services in the matter, at least the thanks of all who have paid any attention to the unfair position in which inventors have so long been placed, especially those who are destitute of the means of providing so costly, though so inefficient, a title deed as our present patent laws afford to secure to inventors—the right of that which is as much their property as is that of the merchant, the landed proprietor, or the author—a property, moreover, realised in the most doubtful of all lotteries to which human intelligence and energy can be applied, as is manifested by the comparatively few that conceive and mature really new and useful combinations, not to say comprehensive and far-going improvements. Most men can follow a copy; but to strike out useful originals seems to be so rare a gift, as to place those who possess it without the pale of human sympathy, or the shelter of legal justice; yet it is a property the most diffusely beneficial of any—extending as it does far and wide its beneficial influence, by increasing the comforts of mankind in all civilised nations.

I suggest the calling of the Legislature's attention to the great difference made between the property of copyright and that of invention—the law of copyright giving a title to such property for the author's life, and seven years beyond, in case such seven years expire within the term of 42 years from the first publication of the work—whilst the title to the property of invention is limited to 15 years; yet the property realised by invention is attended with incomparably greater risk in its achievement, requires much more arduous and self-sacrificing perseverance; the obstacles are more subtle, stubborn, and numerous, which inventors have to contend against; and last, though not least, after they have met and reduced all the physical elements, so as to accomplish their ends, they find prejudice and a host of obstacles to contend against, which make their 15 years of property right too often but a snare and a delusion. I would further suggest, for the protection and good of the public, as well as for the advantage of real and useful inventions—though it may not specifically apply to the petition—that an impartial tribunal, if such could be established, be formed of men conversant with the abstract conditions which science demands, and without which, however specious inventions may appear, they are certain to disappoint inventors no less than the public; but, if the abstract conditions requisite are fully embodied in inventions, then I will maintain it savours more of arrogance than of science, to predict that the mere practical details cannot be supplied. On this head, I have had no little experience myself; and I do know that, in the numerous difficulties I have had to grapple with, I invariably have found that, if all the leading principles were fully established by experiment, that numerous ways suggest themselves for carrying out the mere practical details. T. CRADDOCK.

Birmingham, April 13, 1848.

## X STEAM BORING-MACHINE.

SIR.—The steam-engine has, in many mining operations, superseded manual and animal labour; but I have not yet seen, nor do I think it has been much used in mineral boring generally. The double-brace head, the spring-pole, or the break, or lever, as in the beginning, even until now, have been, and are still working, after the good old fashion. Nasmyth's direct-action engine has been applied to forge hammers, to piling-engines, and why not to boring? The usual method of boring, as most of your mining readers well know, is by iron rods, about 1*g* in. square, screwed into each other, in about 4 ft. lengths. To the lower end is fixed the chisel, and on the top a "brace-head," with four arms springing from the centre, about 2 ft. long each. Four men generally work the rods, moving slowly round each stroke, to make the hole round. The rods are lifted with a windlass, when the hole requires cleaning, &c. When the bore is 10 or 15 fms. deep, a spring-pole, or generally a lever, is put on. This lever is generally about 20 ft. long, and the lever power as six to one, or thereby, to the end of it is attached (by a rope or chain) the rods. On the other end, three or four men work it up and down—the master borer guiding the rods at the top of the hole. The number of strokes is from 15 to 20 in the minute—the rods being lifted about 8 in. each stroke; and, as the bore gets deeper, they are less—thus making the operation slow, and very expensive. What I propose, is to have a small portable boiler, constructed something after the principle of the locomotive boiler, with tubes, and fired inside; and attached to this a steam cylinder (on Nasmyth's steam-hammer principle), to the piston-rods of which the rods are to be connected. A winding-drum, to be wrought by the engine, and disconnected when not needed, will draw the rods, for the purpose of cleaning the hole, shifting chisels, &c.; or, if the Frenchman's system of boring with tubular rods, and forcing up the borings with water, were adopted, nothing could fit better than to attach a force-pump to the piston-rod, and both would work together. A machine of this kind, with an 8 in. steam cylinder (the stroke might be 6 in. or more, if necessary; and any one who has seen Nasmyth's steam-hammer going, will understand how gently the rod might be dropped), would, with a pressure of 40 lbs. on the square inch, easily work 60 fms. of rods 100 strokes a minute; and all the attendance needed would be a man and a boy, to guide the rods and watch the machine. This rude idea may set some of your ingenious correspondents a thinking, who may approve, improve, or condemn. To be serviceable is the only wish of your obedient servant,

STEAM.

Blaenavon, April 11.

RAILWAY ACCIDENTS.—It appears, from a recent return, that 110 persons were killed, and 74 injured, on all the railways of Great Britain and Ireland, during the six months ending 31st Dec., 1847. There were 5 passengers killed, and 39 injured, from causes beyond their own control; 3 passengers killed, and 3 injured, owing to their own misconduct and want of caution. There were 9 servants of companies and contractors killed, and 8 injured, from causes beyond their own control; 56 servants of companies and contractors killed, and 19 injured, owing to their own recklessness, or want of caution. There were 36 trespassers and others, neither passengers nor servants, killed, and 5 injured, by improperly crossing, or standing on the railway, and 1 suicide. During the above period, 31,781,607 passengers were conveyed over the lines; from which it appears that 1 passenger out of every 6,966,926 was killed, and 1 out of every 770,580 injured; but that only 1 out of every 6,316,921 was killed, owing to causes beyond the individual's own control, and fortunately not more than 1 passenger in 10,578,202 through his own misconduct or want of caution. The total number of passengers killed and injured amounted to 50, or 1 in 634,692. There were 5 accidents, from the breaking of as many axles of locomotive engines, 2 accidents from breaking 2 axles of tenders, and 1 accident from the breaking of the wheel-tire of an engine to an express train.

## IMPROVEMENTS IN LOCOMOTIVE ENGINES AND CARRIAGES.

[Specification of patent granted to James Pearson, of New Cross, engineer, for improvements in locomotive engines and carriages. Patent dated Oct. 7, 1847.]

The improvements, which form the subject of this patent, as set forth in the specification thereof, are illustrated by three sheets of drawings; but as the leading features of the invention are without complexity, the nature of these improvements may be thus briefly described:—The first of these improvements relates to the boilers of locomotive engines, and consists in arranging, or disposing, the fire-box about equidistant from each end of the boiler, instead of at one end, as usually practised. This is effected in the following manner:

Two short locomotive boilers, of the construction hereafter described, are placed end to end, so that their fire-boxes abut against each other, and are in this position connected together, so as to form one long boiler; the fire-boxes thus brought together forming one common fire-box, having two doors for supplying fuel thereto, and the upper part serving as the foot-plate for the engine driver and stoker. The axle upon which the driving-wheels are fixed passes through the fire-box, and beneath the said foot-plate; and the trailing wheels, which are eight in number, are arranged or disposed in two swivel frames (4 in each frame), beneath the body of each short boiler, or each half of the long boiler, formed as above described—such swivel frames being for the purpose of allowing the framing of the engine and wheels to adapt themselves readily to the curvatures of the line of railway. This is effected by the following arrangement:—The swivel frames, which carry the travelling wheels, are connected together at their inner ends by tension rods, the extremities of which pass through lugs, or projections, fixed to, or formed upon, each of the swivel frames, such rods being connected thereto by nuts placed upon the screwed ends of the tension rods; and, in order that the frames thus connected together should possess flexibility, the patentee employs washers, composed of short cylinders of vulcanized India-rubber, or other elastic material, placed between said lugs and nuts. The steam chambers are situated at each end of that part of the boiler near the fire-box, and are connected together by a horizontal pipe, the top of each steam dome, or chamber, being furnished with a safety-valve, and each extremity of the boiler terminating in a chimney; one having an exhausting fan, or blower, placed therein, for the purpose of exhausting or drawing the heated air from the tubes of the boiler—such fan being worked by a cross strap, passing over a rigger on one of the trailing wheels, or in any other convenient manner. The patentee states, that by this peculiar arrangement of the fire-box, he is enabled to get the centre of gravity of the boiler very low. The drawings also exhibit coupled engines constructed on this principle—one of which shows an engine having two pairs of driving-wheels, and four pairs of trailing-wheels—the driving-wheels only being coupled. Another arrangement exhibits an engine having two driving-wheels, and eight trailing wheels, all of which are coupled together; and the same drawing shows the boiler as being constructed without a chimney, but having two fans—one at each extremity of the boiler, with a channel leading therefrom to the fire-box, for the purpose of exhausting the air from the tubes of the boiler, and returning the heated air again to the fire-box, if necessary. To carry the fuel and water necessary for the working of the engine, the patentee proposes to make use of the space by the foot-plate, and to employ outside cylinders, for imparting motion to the engine. The trailing wheels are furnished with breaks, which are under the control of the engine-driver.

Another part of these improvements relates to the construction of railway carriages, and consists in forming the framework with independent swivel frames, which are connected together by one or more tension rods, in a similar manner to that before mentioned, with respect to the construction of locomotive engines. In conclusion, the patentee states, that he does not claim the constructing of locomotive engines and carriages with bogie, or swivel frames; but what he claims is—first, the form of boiler, exhibited by the drawing annexed to, and forming part of, the specification (before described); secondly, the constructing of locomotive engines and carriages with bogie, or swivel frames, in combination with tie rods, or connecting tension rods, and pieces of vulcanized India-rubber, or other elastic material, applied thereto, in the manner, and for the purposes, particularly described and set forth in the specification; thirdly, the application to the boilers of locomotive engines, of one or more exhausting or blast fans, for the purposes set forth; fourthly, the arrangements set forth, and described, with reference to the construction of coupled engines.

Patent-office and Designs Registry, 210, Strand, April 13.

## INDURATING BUILDING MATERIALS.

Our attention having been called to an advertisement in another column of Mr. Hutchison's indurated stone, &c., we were induced to visit the office, and among the extraordinary discoveries of the present day, by which materials of the most humble pretensions in works of art are rendered of the utmost utility—the most refractory substances made to bend to the power of scientific research, and many productions, which have for ages been thrown away as useless, brought into most extensive usefulness—we know of none by which a more extraordinary, not to say magical metamorphosis is effected, than the operation patented by Mr. Wm. Hutchison, by which plaster of Paris, Bath, Caen, and other soft stone, chalk, wood, pasteboard, and, in fact, any other material, is rendered hard as metal, receiving the most brilliant polish, and made absolutely imperishable from atmospheric action, vermin, &c. The purposes to which this patent can be applied are innumerable. The first idea of the patentee was the induration of the softer and more common, and almost useless, stones for the purposes of paving; but so complete was his success, that he soon took a loftier view; and has rendered the operation, not only applicable to all common purposes for which stones and slates are used in building—such as paving, both internal and external, window-sills, eisterns, fittings of dairies, &c.—but now applies the operation to all the higher works of art. Plaster of Paris casts, of the most elaborate designs, in busts, reliefs, architectural ornaments, fonts, and ornamental flooring for churches, trellis work for balconies, ornamental inkstands, &c., are rendered imperishable by the operation of the elements, and hard and tough as metal. Sculptors who may so choose, may work in Bath or Caen stone, or even chalk, and the production will be rendered superior to marble; and in all these operations the finest edges of the cuttings are preserved, and not a chisel mark is lost.

In inspecting specimens of Mr. Hutchison's works, we were shown a slab, of a soft fine sandstone, from Tonbridge Wells—so soft, that it might be rubbed into powder by the hand—rendered hard as granite, and rung like a bell; numerous plaster of Paris ornaments and busts, metamorphosed into bronze, granite, and party-coloured marbles—drain, water, and gas pipes, made from Bath stone, chalk, or paper, hard as granite, and polished internally like marble; in fact, the results of the operations are most extraordinary. The water-pipes, and prepared sheets for roofing, will be found most economical, both in first cost and in wear and tear; in fact, they can be rendered at a cost which comes far below any other description of material which has yet been introduced for these purposes; the sheets would also be highly applicable for railways, and many other public engineering uses. We recommend the attention of engineers, architects, sculptors, builders, &c., to this interesting patent, which, we feel assured, will prove of great public utility. Mr. Hutchison has also a model of a stone-sawing machine, which performs its work most perfectly by hand labour—entirely superseding steam machinery.

Works are already established in London, Caen in Normandy, and at Tonbridge-wells, in Kent. The patents, works, &c., are divided into 12 shares, of 3000/- each—two-thirds of the value to form the working capital, and the original proprietors retaining four shares. Parties will be treated with for the remaining eight shares.

## REDGRAVE'S PATENT FIRE-ESCAPE.

As the protection of life against fire is a subject which cannot fail to interest all persons, more or less, we beg to lay before the readers of this Journal a brief description of a very ingenious self-acting apparatus, or fire-escape, intended to be placed beneath the windows of sleeping or other apartments, of dwelling-houses. This apparatus is arranged and disposed, as follows:—Near the sill of the window two brackets are securely fixed, and carry upon pins two levers, which constitute a folding skeleton frame-work, to which is affixed a canvas bag, rendered fire-proof by any of the known means; this apparatus, when folded up, is enclosed in a neat mahogany cupboard, which may serve as a toilette table; or, if in a sitting-room, may be formed to resemble a piece of furniture suitable to such room. When it is required to use the apparatus, in case of fire, it is only necessary to open the two halves of the cupboard upon their hinges, the first effect of which is to disengage a catch, and thereby to open the window—after which the pressure of two powerful springs against the before-mentioned levers has the effect of throwing the canvas bag out of the window, and places it instantaneously in a fit position for immediate use; and, in order to break the fall of the person passing down the bag, the patentee suspends the bag by cords, fixed at different parts thereof, so as to produce a zig-zag direction of the bag, similar to a winding staircase. Those who wish to inspect the machine itself, may do so, by applying to Mr. Redgrave, 22, Adelaid- road, Haverstock-hill.

## GOLD MINING IN AMERICA AND CANADA.

As everything connected with the successful results of mining operations, particularly as regards the precious metals, is of the most lively interest, we proceed to lay before our readers some account of a gold mine in the state of Virginia, in North America, supposed to be the most extensively worked, and the best organised of any of the gold mines in the United States. This mine is situated in a fertile and populous country, with good roads, and rapid and easy conveyance, and when we consider the mining districts of South America and Russia, their almost inaccessible situation, difficulty and expense of carriage, &c., the superiority of the situation of those of North America is self-evident.

The Orange Grove or Vaucluse Mine is situated in Orange County, State of Virginia, near the eastern line of Spotsylvania County, about two miles north of the Swift-run-gap turnpike, leading from Fredericksburg to Orange Court-house, one mile south of the Rapidan, or south branch of the Rappahannock River, and about 17 miles from Fredericksburg. This mine was discovered in 1832, and for a number of years worked as a deposit or surface mine for gold, before the veins or lodes of ore containing the precious metal were discovered. The surface working, or washing, for gold on the estate has been conducted from that time (with few, if any, intervals) until the year 1846, always yielding a good profit for the labour and capital employed. The veins or lodes of ore, which are numerous, run N.N.E. and S.S.W., and dip to the N.E. The walls of the same are of various slates. The ores are slate, talcose, schist, and quartz, containing sulphure of iron, brown oxide of iron, black and brown hydrates of iron, and the slates near the veins or lodes are highly metalliferous and often coloured with iron. At the depth of 70 ft. or 80 ft. the hydrates are often found incrusting the sulphures, all of which contain gold, and some of which are very rich. The lodes, or veins, vary in size and width, from 4 ft. to 20 ft., and some bodies of ore are found as wide as 30 ft. or 40 ft.; most, if not all, are connected with one another, by small ledges, or threads. Parallel with these, there has been discovered one containing native copper in minute crystals, and also the sulphur-oxides of copper and iron, all rich in gold, but they have not been worked to any extent, as the native copper forms an amalgam with the gold and quicksilver, which requires the process of cupellation to separate the gold. All the ores here are worked by amalgamation; there is, however, not the least doubt, but that they will be worked to great profit, when the process of smelting is introduced, which is now about to be done, whereby the rich sulphures and hydrates, which are now laid aside, can be advantageously worked. This would add materially to the returns of gold, &c., especially to experiments made on a very large scale, by order and at the expense of the Russian Government, it is resolved, that a given quantity of ore, which, by the ordinary washing process, yielded 5-6ths of an oz., produced by the smelting process, no less than 72 ozs. and 5-6ths of an oz., thus showing, that by the smelting process there was obtained no less than 87 times more than by the old method. In 1844, the present establishment was commenced, the mine purchased, and a powerful and very superior English condensing-engine brought on the ground for the purpose. It will be recollectcd, that the former proprietor commenced operations without the least capital, and had purchased the mine, erected all the machinery and buildings, and built one of the largest, and one of the most complete establishments for mining purposes in the United States, and all from the products of the mine. The mineral tract contains 200 acres, lying in a bold and comparatively narrow strip on the course of the veins, so as to give to each vein a line of dips in length of 14 miles from N.N.E. to S.S.W. There is likewise attached to the same estate, besides the wood on the mineral land, 150 acres of wood and timber land for the engine's consumption, or firewood. The location is one of the healthiest in Virginia, and its proximity to Fredericksburg and the northern counties makes it one of the most desirable mining properties in this country. The machinery consists of a very perfect condensing-Cornish mining-engine, 120-horse power, over which is a first-rate substantial engine-house, and stack 50 ft. high. On the north of the engine and boiler-house is a large frame mill-house, containing six large Chilian mills, consisting of cast-iron bed plate, 5 ft. 6 in., and weighing 2200 lbs. each. On each of the six bed-plates are two runners, or cast-iron wheels, or 12 in. number, 5 ft. 6 in., 11 in. face, and 2 in. thick, running on the edge, the centres of which are filled with heavy oak timber, and each, with their shafts, weighs about 2000 lbs. These mills are situated in two rows, and are geared to, or receive their motion from, the steam engine. As all the ores are ground in water, each mill is supplied with warm and cold water at pleasure; 12 in. from the top of the bed-plate there is a wide open mouth which allows the turbid or thick water (as by the grinding or reducing the ore) to escape into a trough, by which it is conducted to the tanks or reservoirs. There is likewise in this department the machine for washing the residuum, and obtaining the amalgam and quicksilver hereafter mentioned. On the south side of the steam-engine is the stamp-house and amalgamating room, containing six batteries of three stamps each, or 18 in. number, also driven by the engine, and each of which, with the iron-head of 125 lbs., weighs 350 to 380 lbs. The stamps of each battery of three are supplied with water, which is regulated by a stop-cock; at each blow of the stamp a portion of fine ore, freed gold and water pass out of the boxes through the grates, and thence through troughs to the amalgamating rooms. The bowls are supplied with runners, which move horizontally; in the centre of these runners is an eye or opening, like that in the runner of a corn-mill. The ground, or fine-stamped ore, gold, and water pass into this eye of centre, and by the rotary motion of the same, are brought into contact with the quicksilver deposited in the centre, and form an amalgam, the affinity of the one for the other being very great. To the east, and near the 18 amalgamating mills, are three Chilian mills, like the six described in the north wing, but rather heavier. Beside the buildings for the machinery, which are all of substantial frame, there are dwelling houses for agents, superintendents, building houses, carpenter's shop, store-house, blacksmith and machine shop, grist-mill, caissons for 100 to 150 workmen, stabling for 20 horses, and all necessary out-buildings, as bake-house, kitchen, &c. The buildings are all in good order and new. The ore is raised from the pits, or shafts, which vary from 30 ft. to 80 ft. deep, by hand windlasses and horse-whims, in iron-bound buckets, to which are attached well tried iron chains, invented for the purpose, instead of ropes. The ores, on arriving at the surface, are divided into two classes—coarse and hard ore, the former, slate and fine or small ore for the Chilian mills; this is done by means of a large screen. The ore which passes through this screen is sent in carts, or by railroad, to the mill-house, and the coarse, or large pieces, to the stamps; the very large pieces are first broken with hammers, but that is seldom required. The water is raised from the different shafts or pits, as it accumulates in the mine and runs from thence to the dam or great reservoir, where all the water from the various branches, as well as the pits, is concentrated, and passes through a tunnel, to the large well-room, in which are located the 18 stamps and one 4 inch iron pump, to raise the water into a large cistern, containing 7000 gallons, for the steam-engine, mills, stamps, and all other purposes required in the working and washing processes. Attached to the steam-engine by a connecting-rod or joint, and raised by a heavy frame-work above the working beam of the same, is a large balance-bob made of heavy oak timber, the out-end of which works outside the engine-house. There is connected or attached a large sliding-rod, passing down into the pit or well-rooms; to this is connected or offset the two lifts or pumps as above-mentioned, and likewise another or second lift, connected at pleasure, which drives the line of flat-rods, leading to the different pits, where they are connected by the different rods, to the lifts or pumps in the shafts, from which the water is raised to the surface.

The small or fine ore are ground in the Chilian mills in water, which, as before stated, constantly passes off, carrying the finely ground ore and earthy matter with it; the gold, being freed from the earthy ore, is carried or precipitated to the bottom by its specific gravity. One boy attends three mills, the out-end of which works outside the engine-house. There is cleaned out, taking all the residuum of the ore, which has been ground during the term, and which in each mill is reduced to about three common buckets full, in which are the gold and quicksilver. Having ground and amalgamated the gold, which has been freed from the bottom or bed-plate, comes in contact with the quicksilver, for which it has a very strong affinity; this residuum is placed in a strong iron-bound box, sufficiently large to hold the contents of all the mills for the 12 hours, and at the end of every 24 hours, or two terms, is washed out, or rocked down in a machine in the process, where the gold amalgamates, and the amalgam of gold and quicksilver is obtained and washed clean, which is then strained through buckskin or fine Nankin, expressing all the superfluous mercury, and leaving the amalgam of gold and quicksilver dry, and in a hard ball. The same process is pursued with the residuum from the stamp and amalgamators; these balls are then placed, in sufficient quantities, in an iron retort, well heated in a small iron pot or furnace, the mouth of the being inserted in water. When the temperature of the furnace is raised to from 600° to 610° Fahr., the mercury or quicksilver escapes in vapour, and is condensed in a metallic form in contact with the water; after a short time, say 30 or 40 min., according to the mass and heat applied, the process is complete—and, on opening the retort, the gold is found, if clean, of a bright yellow colour, but porous or spongy; it is then placed in a crucible, and melted with a little borax or potash, and, if impure, a little nitre or saltpetre is added. When completely fused, it is cast into an ingot, and the work is complete, bringing out a beautiful bar which usually weighs, when full, about 1000 dwt., and of a fineness of 945 or 999 fine, or nearly 9 per cent. finer than the coin of the United States. The quantity of quicksilver used, and the annual loss in this large establishment, is not over from 250 to 300 lbs., at a cost of \$120 to \$150. The quantity of one ground per day varies according to its quality or character, as hard or soft, quartz or slate, sulphur or decomposed ore. The machinery is now sufficient to reduce a great quantity, and the engine, which is powerful, is capable of driving much more; the engine cost \$10,000 to import it from England. The whole establishment is built with a view to permanency and usefulness, the quantity of ore is, without doubt, inexhaustible; the ore varies somewhat in richness, but has always paid a great profit, as the whole establishment, machinery, buildings, also tools, horses, wagons, and carts, fall little short of the cost of \$70,000, and have all been procured by the proceeds of the mine, as well as the purchase money of the property. Pieces weighing 2, 3, 4 dwt. (the dwt. of gold from this mine is worth from 58 to 100/- each) have been taken out as deep as from 30 to 60 ft., and from 3 to 4 lbs. of the ore, as much as 16 to 18 dwt. have been obtained by pounding and washing.

This description is fully supported by the report of Mr. O. Matthews, mining engineer, and that of a committee of three gentlemen, appointed expressly for an official inspection of the mine, in September, 1847; as also from an analysis by Mr. J. C. Booth, of Philadelphia, of four specimens, producing respectively, 16 dwt. 4 grs., 12 dwt. 12 grs., 6 dwt. 13 grs., and 2 dwt. 12 grs., to the 100 lbs. of ore—who states they would produce three-times as much if they could be obtained free from matrix, and that either would yield a rich mat with the exception of two gentlemen, we believe, entirely under the control of British subjects.

While on this subject, we would notice a remarkable fact, of considerable importance to our Canadian settlements. The discovery of gold in Canada has hitherto been treated by capitalists with indifference, not unmixed with incredulity; we learn, however, from impartial sources, that investigations in the valley of the Chandiere, by a Mr. Cunningham, an experienced mineralogist from the United States, has proved the existence of gold in no inconsiderable quantities. Indeed, the very name given by the first settlers is evidence of their having found gold, if only in small quantities—viz.: "Le Val d'or." A Mr. De Lery, who has a considerable seigniory near Quebec, has spent several years in similar pursuits, and corroborated Mr. Cunningham's successful explorations. In a report published by Mr. De Lery, there is given the exact amount of gold obtained from several washings; and, although these experiments were conducted in a hasty manner, and with imperfect implements, they have incontestably established the value of the mine, and the cheapness and facility in working it—some of the gold has been sent to New York, and has

been pronounced of the richest, and purest quality. There is one important subject connected with the working of gold mines, which capitalists should not lose sight of—extreme cheapness, being extremely simple, and admitting of being carried on by one or two scientific mineralogists, assisted by workmen procured on the spot. The gold is usually found in the bed of some stream, either in the form of dust, or in rounded masses of various sizes, associated and frequently cemented with the gravel which forms the bed of the river. This gravel is collected, and subjected to a process called riddling, by which a portion of the mineral, in the form of dust, gravitates to the bottom of the sieve, and escapes into a trough underneath, which is gently filled with crude mercury. The conglomeration portion is, by the process of riddling, detached from the silty gravel, and, escaping through the holes of the sieve, is received along with the dust in the trough; the gold and mercury coming in contact in this vessel form an amalgam; this amalgam is then subjected to a gentle heat in a retort, and the mercury, becoming volatilized, is received in another vessel, whilst the gold remains behind in a pure state; it is now ready for the mint, and its transport to market is unattended with any further expense.

From this short sketch it is evident, that being in the midst of good roads, water carriage, and a large population, it is clear that a great deal of the usual expense of mining operations would be avoided; and we have no doubt the spirited capitalists of Quebec, and other parts of Canada, will soon be induced to turn their attention to the subject.

## MINING IN CANADA.

Successful explorations for mineral produce, particularly copper, on the shores of Lake Superior, appear to be progressing on the Canadian side of the lake, as well as on that of the United States. From an abstract of the report of the directors of the Montreal Mining Company, read at the annual meeting, on the 16th February last, we learn that 18 locations, on the borders of the lake, had been granted to the company. A proposal having been made for the junction of the Canada Company with the Montreal Company, the negotiation was brought to a favourable issue, and a highly influential list of names added to the proprietary of the company; the capital stock was divided into 100,000 shares, 40,000 to each company, and the remainder held in reserve, of the nominal value of 5/- each—12s. 6d. per share paid. The works during the summer had been confined to the examination and testing of some of the localities, and on the shores of Lake Huron, from Sault St. Marie to Lacloche. These examinations had not answered the expectations entertained, but two veins of considerable promise on No. 15 location had been opened, and rich specimens obtained from them.

From the information communicated by the company's officers, the directors were impressed with the belief that the Bruce Mines were incomparably the richest that had been, or were likely to be discovered in the region of Lake Huron. Acting on this conviction, they renewed a negotiation with the proprietors of these mines, and have now to congratulate the stockholders on the accomplishment of the purchase. The consideration agreed to be given for these mines, was 14,200 shares of the Montreal Mining Company's stock, assessable for all future calls, and 33,250/- in money. Of the latter 15,000/- is payable by instalments before the 28th August next, and the balance in six yearly payments with interest.

The Bruce Mines are situated on a location originally granted to J. Cuthbertson, Esq., of Montreal, on a bay at the head of Lake Huron, about 33 miles from Sault St. Marie. The front of the location is principally occupied by this bay, into which vessels of any size may enter; and, for the convenience of loading and discharging, a wharf has been built upon a small island, joined to the land by a bridge of about 600 feet in length. At this wharf vessels drawing 10 ft. of water can be moored, and by adding another crib, a depth of 12 ft. will be obtained. During the last summer the steamers from Detroit to the Sault constantly called and discharged there, which will now have increasing inducements to continue. From the water's edge the ground rises by a gentle inclivity to one of the mines, the surface of which is about 70 ft. above the level of the lake, sufficient to allow of the drainage of the shafts, &c., in the 10 fm. level. This vein has been uncovered for a distance of about three-quarters of a mile, averaging about 4 ft. in width, and showing, along its whole surface, a large proportion of rich ore in the clear white quartz of which it is composed. On this vein three shafts have been sunk—one to a depth of 65 ft., at the bottom of which the vein maintains both its size and quality. Another vein is seen running nearly parallel to it, containing rich yellow sulphur of copper, and averaging about 12 ft. in breadth; this vein has been traced to a considerable distance, and a shaft sunk to a depth of 12 ft., with rather increasing richness. There is also another vein about a mile to the north-west, showing the same appearance, and even wider, and which will doubtless, on being opened, support the indications on the surface. In the aggregate, these veins have been traced for nearly two miles in length.

Capt. Roberts, on the 9th July last, wrote as follows:—"To arrive at anything like the intrinsic value of the mines, in their present undeveloped state, is quite impossible. This vast deposit of copper ore at the very outcrop of the veins is incalculable, and almost unparalleled. It exceeds anything I have ever seen or heard of in Europe; and so strongly am I convinced of its value, that I would recommend that every possible means be adopted with a view to the purchasing of the mine, at even 100,000/- sterling, if it cannot be accomplished for a smaller sum." The property had been transferred to the Montreal Company, and a call of 7s. 6d. per share made to meet the demand. Arrangements were making for the erection of the necessary buildings in the spring,

**CASCADE MINE.—TWENTY SHARES** in this valuable MINE TO BE SOLD, for TWELVE SHILLINGS per SHARE.—Apply at the Royal British and Foreign Mining Offices, 140, Strand, London.—April 7, 1846.

**IRON, HARDWARE, AND METAL TRADES' PENSION SOCIETY.**—The FIFTH ANNIVERSARY FESTIVAL of this INSTITUTION will be held at the LONDON TAVERN, BISHOPSGATE-STREET, on WEDNESDAY, the 26th April, 1846—the Right Hon. the LORD MAYOR in the chair.

PRESIDENT.—WILLIAM THOMPSON, Esq.

VICE-PRESIDENTS.—WILLIAM THOMPSON, Esq., Alderman, M.P.

Thomas Badger, Jun., Esq. George Doane, Esq. T. W. Kennard, Esq. Thomas Langton, Esq. Crowley Millington, Esq. Richard Miner, Esq. Robert Bulling, Esq. T. B. Simpson, Esq. R. Stephenson, Esq. Richard Stuart, Esq. H. L. Taylor, Esq. H. J. Vardon, Esq. Philip Williams, Esq.

William Barrows, Esq. Samuel Ellis, Esq. James Foster, Esq. John Gardner, Esq. John Gibbons, Esq. William Gosid, Esq. Sir Josiah John Guest, Bart. M.P. M.P. Thomas Hawkins, Esq. Samuel Hawkins, Esq. R. W. Kennard, Esq.

CHARLES HILL, Esq. Sheriff of London and Middlesex. G. Fowler, Esq. David Gilman, Esq. S. M. Peto, Esq. M. Platow, Esq. C. A. Preller, Esq. D. Pretyman, Esq. C. Charles Ralph, Esq. C. J. Edpath, Esq. T. S. Richards, Esq. B. Ridge, Esq. George Scamell, Esq. William Shaw, Esq. T. B. Simpson, Esq. William Smith, Esq. C. E. T. W. Kennard, Esq. William Swann, Esq. Thomas Lee, Esq. William Massey, Esq. H. L. Taylor, Esq. F. A. Tideman, Esq. Josh. G. Walker, Esq. Samuel Wells, Esq.

William Barrows, Esq. Joseph Bennett, Esq. John Brown, Esq. R. Bull, Esq. W. S. Burton, Esq. John Carter, Esq. T. H. Chidley, Esq. John Chubb, Esq. Thomas Constable, Esq. John Dale, Esq. R. Dale, Esq. William Dickinson, Esq. William Dray, Esq. Samuel Ellis, Esq. Henry English, Esq. Jeremiah Evans, Esq. A. H. Farwig, Esq. John Faulkner, Esq.

Tickets, One Guinea each, may be had of any of the stewards, and of the honorary secretary, Mr. T. Hawkins, 67, Upper Thames-street.

**FOREIGN CATTLE AND PROVISION COMPANY.** REGISTERED PROVISIONALLY.

(Pursuant to the Acts of Parliament, 7 and 8 Vic., c. 110, and 10 and 11 Vic., c. 78.)

Intended capital £150,000 (with power to increase or diminish the same),

in 15,000 shares, of £10 each.—Deposit 1s. per share.

No call will exceed 10 per cent. of one month's notice will be given.

OFFICES.—No. 3, LOTHBURY.

PROVISIONAL COMMITTEE.

Mr. SAMUEL WOOLSEY, merchant, Norwich. Mr. JOHN KEABLE, Jun., Great Yarmouth. WILLIAM HENRY CALEY, Esq., Cambridge-terrace, Regent's-park. Mr. ADAM CLARK, salesman, Dumfries and Norwich. Mr. MAHNE REDGRAVE, 29, Moorgate-street. MR. ERNEST H. VAN STRAETER, Rotterdam. MR. JOHN PITFORD, provision merchant, Cotton's Wharf, Tooley-street. Captain JAMES TOMLIN, 72, Cornhill. Captain J. P. CHATTEN, 264, High-street, Wapping. Mr. STEPHEN FROMOW, salesman, Norwich. Mr. DAVID GORDON M'QUHAR, salesman, Norwich. Mr. B. J. CHAPMAN, 4, St. James-road, Old Kent-road. Mr. SAMUEL THURNELL, Adel-street, Cambridge-heath. Mr. WILLIAM THEMALINE, 33, Prospect-street, Goodman's-fields. Mr. AUGUSTUS CROOK, Bungay, Suffolk. Mr. JOHN LEWIS, 41, Beech-street, Barbican. Mr. J. VAN RAALTE, Great Yarmouth. Mr. G. E. PARISH, 15, Cranmer-place, Waterloo-bridge. Mr. J. E. LAWS, Great Yarmouth.

(With power to add to their number.)

SOLICITORS.—T. D. Kelgley, Esq., 73, Basinghall-street; Messrs. Reynolds & Palmer, Gt. Yarmouth.

BANKERS.—Messrs. Barclay, Bevan, Tritton, & Co., Lombard-street; Messrs. Gurney and Birkbeck, Norwich; Messrs. Gurney, Turner, and Brightwen, Great Yarmouth; Messrs. Moses, Ezekiel, and Co., Boffordham.

LONDON AND FOREIGN AGENTS.—London.—A. Spielmann, Esq., Lombard-street; H. J. Van Straeter, Rouen—Mons. Maggiore Aubert. Rotterdam & Dordrecht.—J. H. Van Straeter, Coruña and Vigo—Messrs. Ortega and Co. Amsterdam.—E. S. Van Beusekom. Hanover.—Jacob Thorner. Hause-de-Groen.—Henry Mansma.

SECRETARY.—James Dove, Esq.

This company is projected for the purpose of organising a system, upon which the importation of cattle and provisions from the continent of Europe, or elsewhere, may be carried on more extensively and economically than it can be by individual speculation. The business of the company will be primarily that of importing cattle, sheep, and provisions from Holland, Denmark, Germany, Spain, Portugal, Scotland, and any other country which presents a favourable market; and attention will also be directed to the purchase of cured and prepared provisions, and dairy, farm-yard, and orchard produce, when it can be imported with advantage.

The importation of foreign cattle for consumption into this country is still in its infancy; but the rapid progress which it has already made, gives ample assurance, not only of the great profit attending it, but of the existence at once of a demand and supply sufficient to afford active and lucrative employment for the resources of a public company.

The following returns are extracted from the official reports of the Board of Trade made up to the 5th of January, 1845:—

A Return of Live Animals Imported in the years 1845, 1846, and 1847.

	1845.	1846.	1847.
Oxen and bulls	No. 9,743	17,191	27,811
Cows	6,503	25,349	36,138
Calves	587	2,403	12,389
Sheep	15,845	91,733	136,527
Lambs	112	2,892	3,349
Swine and hogs	1,060	3,856	1,242
Total of all kinds	34,380	143,523	216,460

Showing an increase of more than 400 per cent. in 1846 over 1845, and of more than 600 per cent. in 1847.

The above returns exhibit a trade in which the transactions appear (from a moderate calculation), to have amounted during the last year to more than a million and a half sterling, and to have increased in value fivefold in the short space of two years. These results too have obtained by the feeble agency and operations of individual enterprise alone; and if these have been profitable, how much more so would be the organised operations of a public company in the same field?

The advantage which this company possesses will not consist solely in the greater extent of their resources, and the more perfect agency under their direction, but also in the economy with which their capital will be employed. By proper arrangements with respectable houses abroad, they will be able, with a comparatively limited capital, to carry on a very extensive scale of importations from all the productive sources of supply.

The committee have the gratification of announcing that they have secured most eligible water-side premises; and that parties of high character and long standing abroad are prepared to enter into the necessary arrangements with the company, and to co-operate with it in realising its anticipations of success, in which they warmly concur.

In addition, the committee would advise to the great facilities which the progress of steam navigation and railway traffic has at length afforded for the vigorous and successful conduct of that branch of international trade which this company will carry on. A constant and expeditious intercourse is now kept up by steam navigation, between the ports of London, Yarmouth, Harwich, Lowestoft, Great Grimsby, and Hull, on this side, and the principal ports of the continent, on the other; and from the latter, railways are diverging in every direction into the interior of the continent, through the rich grazing districts of Holland, Hanover, Prussia, Holstein, and other States of Germany, from which large supplies of cattle and provisions can thus, at all times, be procured.

An Act of Parliament will not be required for the incorporation of the company, the expenses incurred in its formation will not be considerable; and the interests of the shareholders will be secured by a Deed of Settlement, prepared by counsel, until which time all contracts as to shares will be entered into by and with the secretary only, as a trustee for the company.

The company will commence operations as soon as a competent number of shares are taken, and a sufficient amount paid up to render it expedient. The committee have power to increase or diminish the capital, and to reserve a portion of shares for allotment at a future period, if deemed advisable.

Applications for shares in the annexed form to be sent to the secretary, at the offices of the company, No. 3, Lothbury, where prospectuses may be obtained. Also at the offices of the solicitors to the company; Adam Spielmann, Esq., Lombard-street; the Bell Inn, Market-place, the Bell Inn, and the Cattle-market Inn, Norwich; Mr. Laws, the Quay, Mr. Costerton, Regent-street, and at the Bear and Angel Inns, Great Yarmouth; Mr. Cavell, Dual; Mr. Burrow, Hastings; Mr. Freeman, Market-place, Newthorpe; Messrs. R. Cross and Son, Lynn; Thomas Tootal, Esq., Manchester; Messrs. Reddale, Myers, and Bailey, Leeds; and at Messrs. John Wills and Co., Liverpool.

FORM OF APPLICATION FOR SHARES.

FOREIGN CATTLE AND PROVISION COMPANY.—(PROVISIONALLY REGISTERED.)

Intended capital £150,000 (with power to increase or diminish the same), in

15,000 shares of £10 each.—Deposit, One Shilling per share.

To JAMES DOVE, Esq., Secretary of the Foreign Cattle and Provision Company.

I request you will allot me shares in the above company; which I agree to accept, or, if less number you may allot to me, and to pay, when required, the deposit of £1 per share to the company's bankers, and to execute the Deed of Settlement, upon receipt of notice from you that the same is ready for execution.

Dated this day of 1846.

Name in full.

Profession or business.

Residence in full.

Name of referee.

His residence and occupation.

**ORANGE GROVE MINING COMPANY—(VAUCLOUSE GOLD MINE).**—Organised August 26, 1847, under charter, by Act of Assembly of the State of Virginia.

Capital \$500,000, issued in 10,000 half shares.—Capital paid in, \$125,000.

PRESIDENT.—WILLIAM PETER, Esq., H. B. M. Consul.

CHAIRMAN OF THE BOARD OF DIRECTORS.—STEPHEN R. CRAWFORD, Esq.

DIRECTORS.

WILLIAM COFFIN, Esq.

WILLIAM FORD, Esq.

F. A. BELL, Esq.

JAMES CRAWFORD, Esq.

WILLIAM W. HALY, Esq.

W. K. SMITH, Esq.

TREASURER.—F. A. Bell, Esq.

SECRETARY.—Francis Finch, Esq.

LONDON AGENTS.—Messrs. Walker, Grant, and Co., King's-road, Gray's Inn.

49

CORNWALL NEW MINING COMPANY.

Capital £100,000, divided into 30,000 shares, of £5 each.

(With power to be increased.)

To be incorporated, in pursuance of the statute of 7 and 8 Vic., cap. 110—by which the responsibility of each shareholder is limited.

Deposit 2s. per share.

Not to be Paid until the Company is completely Registered and Incorporated.

The CORNWALL NEW MINING COMPANY is ESTABLISHED to WORK A SERIES OF TIN and COPPER MINES, chiefly in the district of ST. IVES, which has hitherto afforded a larger profit on its return of ore than any other part of the county.

In pursuance of this plan, five of this description have been already selected—viz.: Georgia Tin Mines, Trewstow Tin and Copper Mine, Bray Tin and Copper Mine, Trevarno Tin and Copper Mine, and Wheal Squire Tin and Copper Mine, with whose owners the committee have been enabled to make such advantageous arrangements, as to enable them to work one or more with even a small portion of the proposed capital.

These mines are not only known to contain mineral ores of immense value, but the workings are already so far advanced, that the losses ascertained and reached must produce early and large returns; and, in addition to the above, there are others which the committee have secured on sufficient public support being obtained.

With a view of inducing the public generally to avail themselves of such a beneficial employment of their capital, the committee have made the shares £5, and of which only £2 10s. is to be paid within 18 months—limiting further calls to the control of the subscribers themselves, and to be made only when a dividend shall have been declared.

Applications for shares to be made, in the usual form, at the offices of the company.

17, Essex-street, Strand; and to the following brokers and agents, of whom detailed prospectuses may be obtained:—Messrs. G. and T. Irvine, Liverpool; Messrs. Cardwell and Sons, Manchester; Messrs. J. Scott and Son, Birmingham; Messrs. Rhodes and Hayes, Leeds; Messrs. Brady and Co., Hull; Mr. Joseph Clarke, Jun., Southampton; Mr. Charles Claye, Halifax; Messrs. William and Charles Skarlow, Plymouth; Messrs. W. Moore and Co., Huddersfield; Mr. Thomas Dewhurst, Bradford; Mr. Henry Fletcher, Exeter; Mr. Ralph Dodsworth, York; Mr. W. F. Collier, Brixham; F. Crowe, Great Yarmouth; Mr. Charles Vincent, Dartmouth; Messrs. Edward Morgan and Co., Norwich; Messrs. Robinson Cruise and Son, King's Lynn.—Prospectuses can also be had at the office of the Mining Journal, 26, Fleet-street, London.

GEORGE LOCKWOOD, Secretary.

Office, 17, Essex-street, Strand.

50

BANGOR AND COYTGOR SLATE COMPANY, BANGOR, NORTH WALES.

Provisionally Registered under the Statute.

Capital £50,000, in 5000 shares, of £10 each.—Deposit 2s. per share, on complete registration.

DIRECTORS.

GEORGE BURGE, Esq.

WILLIAM S. FOSTER, Esq.

CONSULTING ENGINEER.—John Taylor, jun., Esq., F.G.S.

BANKERS.—London Joint-Stock Bank.

SOLICITORS.—Messrs. Fyson, Carling, and Hope.

AUDITOR.—Mr. J. E. Eley.

SECRETARY.—Mr. William Nicholson.

This company is formed for the purpose of working a portion, consisting of 52 acres, of the Great Bangor slate bed, situated about five miles from the port of Bangor, on the London and Holyhead road, and held under a lease, of which 21 years are unexpired.

The Coytgor estate adjoins the celebrated quarry belonging to Colonel the Hon. D. Penman, which has been worked upwards of 70 years, and employs at the present time 2600 men, producing an estimated profit of £29,000 per annum.

On the same vein or bed, to the south-west, is the quarry of Thomas Ashton Smith, Esq., employing 1500 men, and yielding an estimated profit of £50,000 per annum. These quarries were commenced by an outlay of a few thousand pounds.

The vein or bed of the Coytgor estate is the same, both in width and quality, as that of Colonel Penman's and Mr. Ashton Smith's: this is shown by a small adjoining quarry, the Pandraniel, worked to the depth of 150 ft., within 20 yards of the boundary of this company's quarry, and by shafts sunk in various parts of the sett.

The Bangor and Coytgor Quarry has not yet been worked, except upon trial, but a tunnel 9 ft by 7 ft has been driven from the turnpike road, 350 yards through the slate bed, to drain the quarry, and to take off the slate from the lower level, for which a tramway is already laid down. Six years have been occupied in driving the tunnel, which now renders the erection and cost of machinery unnecessary. The tunnel was constructed by the late Mr. Giles, C.E.

The apron, or top of the quarry, consisting of loam and broken slate rock, does not exceed 10 yards in thickness, which may be cleared off within three months, when an unlimited quantity of the best blue and purple slate may be quarried.

Quarrying is chiefly done by piece-work. The wages paid at the adjoining quarries are under 30s. per thousand: the cartage to the port is 9s. per thousand, or 3s. per ton; the present price of slate, taking the average of Dukes, Countesses, and Ladies, is about 8s. per thousand, leaving a gross profit, after the quarry has been well opened, of 50 per cent. on the labour expended, and a net profit of upwards of 30 per cent. The profit on the principal quarries along this great bed exceeds that amount.